88065056

TN
859
.U82
W418 NO. 1

SECTION I

WATER QUALITY DATA

46 S-11

09306700 - WHITE R BLW ASPHALT WASH NR WATSON UT

PROCESS DATE 12/12/74
DISTRICT CODE 49

WATER QUALITY DATA

DATE	TIME	DEPTH (FT) (00003)	SAMPLE NUMBER (00008)	TEMPERATURE (DEG C) (00010)	AIR TEMPERATURE (DEG C) (00020)	SURFACE AREA (SQUARE MILES) (00049)	INSTANTANEOUS DISCHARGE (CFS) (00061)	TURBIDITY (JTU) (00070)	COLOR (PLATINUM-COBALT UNITS) (00080)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	DISSOLVED OXYGEN (MG/L) (00300)	CHEMICAL OXYGEN DEMAND (HIGH LEVEL) (MG/L) (00340)
JULY, 1974												
26...	1430	--	750400	--	--	--	--	500	40	793	--	54
AUG.												
28...	1430	--	750600	19.0	--	--	288	--	4	1650	8.2	9
SEP.												
18...	1430	--	--	19.0	--	--	--	--	7	925	--	16
OCT.												
08...	1200	--	751200	11.5	--	--	464	--	20	650	--	4

47

09306700 - WHITE R BLW ASPHALT WASH NR WATSON UT

PROCESS DATE 12/12/74
DISTRICT CODE 49

WATER QUALITY DATA

DATE	PH (UNITS) (00400)	CARBON DIOXIDE (CO2) (MG/L) (00405)	ALKA-LINITY AS CACO3 (MG/L) (00410)	BICAR-BONATE (HCO3) (MG/L) (00440)	CAR-BONATE (CO3) (MG/L) (00445)	TOTAL RESI-DUE (MG/L) (00500)	TOTAL FILT-RABLE RESIDUE (MG/L) (00515)	OIL AND GREASE (MG/L) (00550)	TOTAL NITRO-GEN (N) (MG/L) (00600)	ORGANIC NITRO-GEN (N) (MG/L) (00605)	DIS-SOLVED AMMONIA NITRO-GEN (N) (MG/L) (00608)	AMMONIA NITRO-GEN (N) (MG/L) (00610)
JULY, 1974												
26...	8.3	2.0	209	255	0	1970	--	3	1.3	1.1	--	.08
AUG.												
28...	8.2	2.5	205	250	0	--	--	--	--	--	.13	--
SEP.												
18...	8.4	1.7	217	265	0	--	--	0	--	--	.01	--
OCT.												
08...	7.9	4.7	189	231	0	--	510	0	--	--	.02	--

PROCESS DATE 12/12/74

09306700 - WHITE R BLW ASPHALT WASH NR WATSON UT

DISTRICT CODE 49

WATER QUALITY DATA

DATE	DIS-SOLVED NITRITE (N) (MG/L) (00613)	DIS-SOLVED NITRATE (N) (MG/L) (00618)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L) (00625)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	DIS-SOLVED ORTHO PHOS-PHATE (P04) (MG/L) (00660)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L) (00671)	TOTAL ORGANIC CARBON (C) (MG/L) (00680)	TOTAL IN-ORGANIC CARBON (C) (MG/L) (00685)	CYANIDE (CN) (MG/L) (00720)	DIS-SOL-VED SUL-FIDE (S) (MG/L) (00746)
JULY, 1974												
26...	--	--	1.2	.14	--	--	1.0	--	13	40	.00	--
AUG.												
28...	.00	.03	.45	--	.03	.03	.05	.01	--	--	--	.0
SEP.												
18...	.00	.00	.90	--	.00	.00	.19	.00	7.7	33	.00	.1
OCT.												
08...	.01	--	.31	--	.00	.00	.07	.00	--	--	.00	.2

49

PROCESS DATE 12/12/74

09306700 - WHITE R BLW ASPHALT WASH NR WATSON UT

DISTRICT CODE 49

WATER QUALITY DATA

DATE	HARDNESS (CA,MG) (MG/L) (00900)	NON-CARBONATE HARDNESS (MG/L) (00902)	DISSOLVED CALCIUM (CA) (MG/L) (00915)	TOTAL CALCIUM (CA) (MG/L) (00916)	DISSOLVED MAGNESIUM (MG) (MG/L) (00925)	TOTAL MAGNESIUM (MG) (MG/L) (00927)	TOTAL SODIUM (NA) (MG/L) (00929)	DISSOLVED SODIUM (NA) (MG/L) (00930)	SODIUM ADSORPTION RATIO (00931)	PERCENT SODIUM (00932)	DISSOLVED POTASSIUM (K) (MG/L) (00935)	TOTAL POTASSIUM (K) (MG/L) (00937)
JULY, 1974												
26...	--	--	--	110	--	41	62	--	--	--	--	6.0
AUG.												
28...	320	120	70	--	36	--	--	180	4.4	54	6.1	--
SEP.												
18...	320	100	76	--	31	--	--	74	1.8	33	3.1	--
OCT.												
08...	280	88	70	--	25	--	--	54	1.4	30	1.9	--

50

PROCESS DATE 12/12/74

09306700 - WHITE R BLW ASPHALT WASH NR WATSON UT

DISTRICT CODE 49

WATER QUALITY DATA

DATE	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	TOTAL FLUO-RIDE (F) (MG/L) (00951)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	DIS-SOLVED ARSENIC (AS) (UG/L) (01000)	TOTAL ARSENIC (AS) (UG/L) (01002)	DIS-SOLVED BARIUM (BA) (UG/L) (01005)	DIS-SOLVED BERYL-LIUM (BE) (UG/L) (01010)	DIS-SOLVED BISMUTH (BI) (UG/L) (01015)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED CAD-MIUM (CD) (UG/L) (01025)
JULY, 1974												
26...	29	170	--	.7	16	--	20	810	<7	<20	280	--
AUG.												
28...	230	210	.3	--	11	0	--	0	<4	<15	190	0
SEP.												
18...	42	200	.3	--	14	2	--	0	0	--	100	0
OCT.												
08...	34	160	.2	--	13	2	--	0	--	--	90	1

5/

PROCESS DATE 12/12/74

09306700 - WHITE R BLW ASPHALT WASH NR WATSON UT

DISTRICT CODE 49

WATER QUALITY DATA

DATE	DIS-SOLVED CHRO-MIUM (CR) (UG/L) (01030)	DIS-SOLVED COBALT (CO) (UG/L) (01035)	DIS-SOLVED COPPER (CU) (UG/L) (01040)	TOTAL COPPER (CU) (UG/L) (01042)	DIS-SOLVED IRON (FE) (UG/L) (01046)	DIS-SOLVED LEAD (PB) (UG/L) (01049)	DIS-SOLVED MAN-GANESE (MN) (UG/L) (01056)	DIS-SOLVED MOLYB-DENUM (MO) (UG/L) (01060)	DIS-SOLVED NICKEL (NI) (UG/L) (01065)	DIS-SOLVED SILVER (AG) (UG/L) (01075)	DIS-SOLVED STRON-TIUM (SR) (UG/L) (01080)	DIS-SOLVED VANA-DIUM (V) (UG/L) (01085)
JULY, 1974												
26...	77	<15	31	30	38000	28	700	<10	76	<4	980	140
AUG.												
28...	0	0	4	--	20	0	.0	4	<1	<2	1300	.6
SEP.												
18...	0	0	2	--	20	2	0	3	1	0	1100	.5
OCT.												
08...	0	0	1	--	100	7	0	3	4	--	--	1.8

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09306700 - WHITE R BLW ASPHALT WASH NR WATSON UT

PROCESS DATE 12/12/74
DISTRICT CODE 49

WATER QUALITY DATA

DATE	DIS-SOLVED ZINC (ZN) (UG/L) (01090)	DIS-SOLVED TIN (SN) (UG/L) (01100)	DIS-SOLVED ALUM-INUM (AL) (UG/L) (01106)	DIS-SOLVED GALLIUM (GA) (UG/L) (01120)	DIS-SOLVED GER-MANIUM (GE) (UG/L) (01125)	DIS-SOLVED LITHIUM (LI) (UG/L) (01130)	DIS-SOLVED SELE-NIUM (SE) (UG/L) (01145)	TOTAL SELE-NIUM (SE) (UG/L) (01147)	DIS-SOLVED TI-TANIUM (TI) (UG/L) (01150)	DIS-SOLVED ZIR-CONIUM (ZR) (UG/L) (01160)	DIS-SOLVED GROSS BETA AS CS-137 (PC/L) (03515)	CHLORO-PHYLL A (UG/L) (32230)
JULY, 1974												
26...	260	<30	84000	18	<30	70	--	0	5000	140	--	--
AUG.												
28...	10	<12	10	<6	<17	110	--	--	<8	<18	--	--
SEP.												
18...	10	--	20	--	--	13	2	--	--	--	--	4.9
OCT.												
08...	30	--	10	--	--	0	1	--	--	--	2.8	1.5

53

09306700 - WHITE R BLW ASPHALT WASH NR WATSON UT

PROCESS DATE 12/12/74
DISTRICT CODE 49

WATER QUALITY DATA

DATE	CHLORO-PHYLL B (UG/L) (32231)	PHENOLS (UG/L) (32730)	METHY-LENE BLUE ACTIVE SUB-STANCE (MG/L) (38260)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L) (70300)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	TOTAL ORTHO PHOS-PHORUS (P) (MG/L) (70507)	DIS-SOLVED AMMONIA (NH4) (MG/L) (71846)	DIS-SOLVED NITRATE (NO3) (MG/L) (71851)	DIS-SOLVED NITRITE (NO2) (MG/L) (71856)	BROMIDE (BR) (MG/L) (71870)
JULY, 1974												
26...	--	1	.0	--	--	--	--	.06	--	--	--	--
AUG.												
28...	--	--	--	892	868	694	1.21	--	.17	.13	.00	.9
SEP.												
18...	2.5	1	.0	596	573	--	.81	--	.01	.00	.00	.0
OCT.												
08...	.1	0	--	465	473	583	.63	--	.03	--	.03	.7

54

PROCESS DATE 12/12/74

09306700 - WHITE R BLW ASPHALT WASH NR WATSON UT

DISTRICT CODE 49

WATER QUALITY DATA

DATE	TOTAL NITRO-GEN (NO3) (MG/L) (71887)	DIS-SOLVED MERCURY (HG) (UG/L) (71890)	TOTAL MERCURY (HG) (UG/L) (71900)	ELEV. OF LAND SURFACE DATUM (FT. ABOVE MSL) (72000)	DIS-SOLVED GROSS ALPHA AS U-NAT. (UG/L) (80030)	DIS-SOLVED GROSS BETA AS SR90 /Y90 (PC/L) (80050)
JULY, 1974						
26...	5.9	--	.0	--	--	--
AUG.						
28...	--	.0	--	--	--	--
SEP.						
18...	--	.3	--	--	--	--
OCT.						
08...	--	.0	--	--	<6.9	2.3

10

S-6

09306420 - EVACUATION CREEK AT WATSON UTAH

PROCESS DATE 12/12/74
DISTRICT CODE 49

WATER QUALITY DATA

DATE	TIME	DEPTH (FT) (00003)	SAMPLE NUMBER (00008)	TEMPERATURE (DEG C) (00010)	AIR TEMPERATURE (DEG C) (00020)	SURFACE AREA (SQUARE MILES) (00049)	INSTANTANEOUS DISCHARGE (CFS) (00061)	TURBIDITY (JTU) (00070)	COLOR (PLATINUM-COBALT UNITS) (00080)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	DISSOLVED OXYGEN (MG/L) (00300)	CHEMICAL OXYGEN DEMAND (HIGH LEVEL) (MG/L) (00340)
OCT., 1974												
10...	1100	--	--	10.5	--	--	.00	--	20	5000	8.5	34
23...	1210	--	--	3.0	--	--	.02	--	--	5780	--	46

local difference in flow

09306420 - EVACUATION CREEK AT WATSON UTAH

WATER QUALITY DATA

DATE	PH (UNITS) (00400)	CARBON DIOXIDE (CO2) (MG/L) (00405)	ALKA-LINITY AS CACO3 (MG/L) (00410)	BICAR-BONATE (HCO3) (MG/L) (00440)	CAR-BONATE (CO3) (MG/L) (00445)	TOTAL RESI-DUE (MG/L) (00500)	TOTAL FILT-RABLE RESIDUE (MG/L) (00515)	OIL AND GREASE (MG/L) (00550)	TOTAL NITRO-GEN (N) (MG/L) (00600)	ORGANIC NITRO-GEN (N) (MG/L) (00605)	DIS-SOLVED AMMONIA NITRO-GEN (N) (MG/L) (00608)	AMMONIA NITRO-GEN (N) (MG/L) (00610)
OCT., 1974												
10...	8.2	5.8	475	579	0	--	--	0	--	--	.10	--
23...	7.5	27	442	539	0	--	--	0	--	--	.06	--

12

PROCESS DATE 12/12/74

09306420 - EVACUATION CREEK AT WATSON UTAH

DISTRICT CODE 49

WATER QUALITY DATA

DATE	DIS-SOLVED NITRITE (N) (MG/L) (00613)	DIS-SOLVED NITRATE (N) (MG/L) (00618)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L) (00625)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	DIS-SOLVED ORTHO PHOS-PHATE (PO4) (MG/L) (00660)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L) (00671)	TOTAL ORGANIC CARBON (C) (MG/L) (00680)	TOTAL IN-ORGANIC CARBON (C) (MG/L) (00685)	CYANIDE (CN) (MG/L) (00720)	DIS-SOL-VED SUL-FIDE (S) (MG/L) (00746)
OCT., 1974												
10...	.01	--	1.0	--	.00	.03	.01	.01	22	90	.00	.2
23...	.00	.00	.72	--	.00	.00	.12	.00	--	--	--	.2

13

09306420 - EVACUATION CREEK AT WATSON UTAH

PROCESS DATE 12/74
DISTRICT CODE 49

WATER QUALITY DATA

DATE	HARDNESS (CA,MG) (MG/L) (00900)	NON-CARBONATE HARDNESS (MG/L) (00902)	DISSOLVED CALCIUM (CA) (MG/L) (00915)	TOTAL CALCIUM (CA) (MG/L) (00916)	DISSOLVED MAGNESIUM (MG) (MG/L) (00925)	TOTAL MAGNESIUM (MG) (MG/L) (00927)	TOTAL SODIUM (NA) (MG/L) (00929)	DISSOLVED SODIUM (NA) (MG/L) (00930)	SODIUM ADSORPTION RATIO (00931)	PERCENT SODIUM (00932)	DISSOLVED POTASSIUM (K) (MG/L) (00935)	TOTAL POTASSIUM (K) (MG/L) (00937)
OCT., 1974												
10...	1500	990	220	--	220	--	--	1000	11	60	11	--
23...	1400	950	210	--	210	--	--	980	11	60	9.2	--

14

PROCESS DATE 12/12/74

09306420 - EVACUATION CREEK AT WATSON UTAH

DISTRICT CODE 49

WATER QUALITY DATA

DATE	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	TOTAL FLUO-RIDE (F) (MG/L) (00951)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	DIS-SOLVED ARSENIC (AS) (UG/L) (01000)	TOTAL ARSENIC (AS) (UG/L) (01002)	DIS-SOLVED BARIUM (BA) (UG/L) (01005)	DIS-SOLVED BERYL-LIUM (BE) (UG/L) (01010)	DIS-SOLVED BISMUTH (BI) (UG/L) (01015)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED CAD-MIUM (CD) (UG/L) (01025)
OCT., 1974												
10...	64	3000	.9	--	9.9	3	--	0	0	--	2100	<1
23...	63	2900	.9	--	9.6	--	--	--	--	--	--	--

15

PROCESS DATE 12/12/74

09306420 - EVACUATION CREEK AT WATSON UTAH

DISTRICT CODE 49

WATER QUALITY DATA

DATE	DIS-SOLVED CHRO-MIUM (CR) (UG/L) (01030)	DIS-SOLVED COBALT (CO) (UG/L) (01035)	DIS-SOLVED COPPER (CU) (UG/L) (01040)	TOTAL COPPER (CU) (UG/L) (01042)	DIS-SOLVED IRON (FE) (UG/L) (01046)	DIS-SOLVED LEAD (PB) (UG/L) (01049)	DIS-SOLVED MAN-GANESE (MN) (UG/L) (01056)	DIS-SOLVED MOLYB-DENUM (MO) (UG/L) (01060)	DIS-SOLVED NICKEL (NI) (UG/L) (01065)	DIS-SOLVED SILVER (AG) (UG/L) (01075)	DIS-SOLVED STRON-TIUM (SR) (UG/L) (01080)	DIS-SOLVED VANA-DIUM (V) (UG/L) (01085)
OCT., 1974												
10...	0	0	3	--	50	2	70	38	12	1	4100	2.8
23...	--	--	--	--	--	--	--	--	--	--	--	--

09306420 - EVACUATION CREEK AT WATSON UTAH

PROCESS DATE 12/12/74
DISTRICT CODE 49

WATER QUALITY DATA

DATE	DIS-SOLVED ZINC (ZN) (UG/L) (01090)	DIS-SOLVED TIN (SN) (UG/L) (01100)	DIS-SOLVED ALUM-INUM (AL) (UG/L) (01106)	DIS-SOLVED GALLIUM (GA) (UG/L) (01120)	DIS-SOLVED GER-MANIUM (GE) (UG/L) (01125)	DIS-SOLVED LITHIUM (LI) (UG/L) (01130)	DIS-SOLVED SELE-NIUM (SE) (UG/L) (01145)	TOTAL SELE-NIUM (SE) (UG/L) (01147)	DIS-SOLVED TI-TANIUM (TI) (UG/L) (01150)	DIS-SOLVED ZIR-CONIUM (ZR) (UG/L) (01160)	DIS-SOLVED GROSS BETA AS CS-137 (PC/L) (03515)	CHLORO-PHYLL A (UG/L) (32230)
OCT., 1974												
10...	10	--	10	--	--	120	0	--	--	--	--	.4
23...	--	--	--	--	--	--	--	--	--	--	--	--

17

PROCESS DATE 12/12/74

09306420 - EVACUATION CREEK AT WATSON UTAH

DISTRICT CODE 49

WATER QUALITY DATA

DATE	CHLORO-PHYLL B (UG/L) (32231)	PHENOLS (UG/L) (32730)	METHY-LENE BLUE ACTIVE SUB-STANCE (MG/L) (38260)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L) (70300)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	TOTAL ORTHO PHOS-PHORUS (P) (MG/L) (70507)	DIS-SOLVED AMMONIA (NH4) (MG/L) (71846)	DIS-SOLVED NITRATE (NO3) (MG/L) (71851)	DIS-SOLVED NITRITE (NO2) (MG/L) (71856)	BROMIDE (BR) (MG/L) (71870)
OCT., 1974												
10...	.5	1	.0	5150	4820	.11	7.00	--	.13	--	.03	.4
23...	--	7	--	4970	4650	.27	6.76	--	.08	.00	.00	.4

18.

PROCESS DATE 12/12/74
DISTRICT CODE 49

09306420 - EVACUATION CREEK AT WATSON UTAH

WATER QUALITY DATA

DATE	TOTAL NITRO-GEN (NO3) (MG/L) (71887)	DIS-SOLVED MERCURY (HG) (UG/L) (71890)	TOTAL MERCURY (HG) (UG/L) (71900)	ELEV. OF LAND SURFACE DATUM (FT. ABOVE MSL) (72000)	DIS-SOLVED GROSS ALPHA AS U-NAT. (UG/L) (80030)	DIS-SOLVED GROSS BETA AS SR90 /Y90 (PC/L) (80050)
OCT., 1974						
10...	--	.0	--	--	--	--
23...	--	--	--	--	--	--

Unpublished Records
Subject to Revision

S-1

09306400 - WHITE RIVER ABV HELLS HOLE CANYON NR WATSON

PROCESS DATE 12/12/74
DISTRICT CODE 49

WATER QUALITY DATA

DATE	TIME	DEPTH (FT) (00003)	SAMPLE NUMBER (00008)	TEMPERATURE (DEG C) (00010)	AIR TEMPERATURE (DEG C) (00020)	SURFACE AREA (SQUARE MILES) (00049)	INSTANTANEOUS DISCHARGE (CFS) (00061)	TURBIDITY (JTU) (00070)	COLOR (PLATINUM-COBALT UNITS) (00080)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	DISSOLVED OXYGEN (MG/L) (00300)	CHEMICAL OXYGEN DEMAND (HIGH LEVEL) (MG/L) (00340)
JULY								500	40	847	—	52
AUG., 1974												
28...	0900	--	--	18.0	--	--	290	--	3	900	8.0	8
SEP.												
17...	1530	--	--	18.0	--	--	--	--	7	890	--	13
OCT.												
09...	1300	--	751200	12.5	--	--	466	--	5	725	8.7	0
22...	1325	1.0	--	11.0	--	--	434	--	--	779	--	8

(2)

PROCESS DATE 12/12/74

09306400 - WHITE RIVER ABV HELLS HOLE CANYON NR WATSON DISTRICT CODE 49

WATER QUALITY DATA

DATE	PH (UNITS) (00400)	CARBON DIOXIDE (CO2) (MG/L) (00405)	ALKA-LINITY AS CACO3 (MG/L) (00410)	BICAR-BONATE (HCO3) (MG/L) (00440)	CAR-BONATE (CO3) (MG/L) (00445)	TOTAL RESI-DUE (MG/L) (00500)	TOTAL FILT-RABLE RESIDUE (MG/L) (00515)	OIL AND GREASE (MG/L) (00550)	TOTAL NITRO-GEN (N) (MG/L) (00600)	ORGANIC NITRO-GEN (N) (MG/L) (00605)	DIS-SOLVED AMMONIA NITRO-GEN (N) (MG/L) (00608)	AMMONIA NITRO-GEN (N) (MG/L) (00610)
JULY	8.3	2.2	222	271	0	1960	–	0	1.4	1.1	.07	
AUG., 1974												
28...	7.9	5.0	204	249	0	--	--	--	--	--	.10	--
SEP.												
17...	7.8	6.7	217	264	0	--	--	0	--	--	.01	--
OCT.												
09...	8.2	2.3	185	226	0	--	520	0	--	--	.03	--
22...	7.5	11	185	225	0	--	--	0	--	--	.02	--

(3)

PROCESS DATE 12/12/74

09306400 - WHITE RIVER ABV HELLS HOLE CANYON NR WATSON DISTRICT CODE 49

WATER QUALITY DATA

DATE	DIS-SOLVED NITRITE (N) (MG/L) (00613)	DIS-SOLVED NITRATE (N) (MG/L) (00618)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L) (00625)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	DIS-SOLVED ORTHO PHOS-PHATE (P04) (MG/L) (00660)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L) (00671)	TOTAL ORGANIC CARBON (C) (MG/L) (00680)	TOTAL IN-ORGANIC CARBON (C) (MG/L) (00685)	CYANIDE (CN) (MG/L) (00720)	DIS-SOL-VED SUL-FIDE (S) (MG/L) (00746)
JULY			1.2	.19			.83	—	13	37	00	— —
AUG., 1974												
28...	.00	.00	.46	--	.00	.00	.03	.00	--	--	--	.0
SEP.												
17...	.00	.00	.75	--	.00	.00	.13	.00	5.5	38	.00	.2
OCT.												
09...	.01	--	.42	--	.01	.00	.05	.00	--	--	.00	.1
22...	.00	.00	.24	--	.00	.00	.09	.00	--	--	--	.1

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PROCESS DATE 12/12/74

09306400 - WHITE RIVER ABV HELLS HOLE CANYON NR WATSON DISTRICT CODE 49

WATER QUALITY DATA

DATE	HARDNESS (CA,MG) (MG/L) (00900)	NON-CARBONATE HARDNESS (MG/L) (00902)	DISSOLVED CALCIUM (CA) (MG/L) (00915)	TOTAL CALCIUM (CA) (MG/L) (00916)	DISSOLVED MAGNESIUM (MG) (MG/L) (00925)	TOTAL MAGNESIUM (MG) (MG/L) (00927)	TOTAL SODIUM (NA) (MG/L) (00929)	DISSOLVED SODIUM (NA) (MG/L) (00930)	SODIUM ADSORPTION RATIO (00931)	PERCENT SODIUM (00932)	DISSOLVED POTASSIUM (K) (MG/L) (00935)	TOTAL POTASSIUM (K) (MG/L) (00937)
JULY	—	—	—	130	—	42	67	—	—	—	—	5.9
AUG., 1974												
28...	280	76	61	--	31	--	--	110	2.9	46	3.8	--
SEP.												
17...	320	100	77	--	31	--	--	85	2.1	36	3.2	--
OCT.												
09...	270	85	67	--	25	--	--	57	1.5	31	1.9	--
22...	260	77	65	--	24	--	--	62	1.7	34	2.3	--

(5)

PROCESS DATE 12/12/74

09306400 - WHITE RIVER ABV HELLS HOLE CANYON NR WATSON DISTRICT CODE 49

WATER QUALITY DATA

DATE	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	TOTAL FLUO-RIDE (F) (MG/L) (00951)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	DIS-SOLVED ARSENIC (AS) (UG/L) (01000)	TOTAL ARSENIC (AS) (UG/L) (01002)	DIS-SOLVED BARIUM (BA) (UG/L) (01005)	DIS-SOLVED BERYL-LIUM (BE) (UG/L) (01010)	DIS-SOLVED BISMUTH (BI) (UG/L) (01015)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED CAD-MIUM (CD) (UG/L) (01025)
JULY	33	180	—	1.5	16	—	21	830	<7	<20	260	<20
AUG., 1974												
28...	68	210	.4	--	11	1	--	0	--	--	120	0
SEP.												
17...	59	190	.3	--	14	2	--	0	0	--	100	0
OCT.												
09...	32	160	.2	--	14	3	--	0	--	--	50	<1
22...	34	170	.3	--	12	--	--	--	--	--	--	--

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PROCESS DATE 12/12/74

09306400 - WHITE RIVER ABV HELLS HOLE CANYON NR WATSON DISTRICT CODE 49

WATER QUALITY DATA

DATE	DIS-SOLVED CHRO-MIUM (CR) (UG/L) (01030)	DIS-SOLVED COBALT (CO) (UG/L) (01035)	DIS-SOLVED COPPER (CU) (UG/L) (01040)	TOTAL COPPER (CU) (UG/L) (01042)	DIS-SOLVED IRON (FE) (UG/L) (01046)	DIS-SOLVED LEAD (PB) (UG/L) (01049)	DIS-SOLVED MAN-GANESE (MN) (UG/L) (01056)	DIS-SOLVED MOLYB-DENUM (MO) (UG/L) (01060)	DIS-SOLVED NICKEL (NI) (UG/L) (01065)	DIS-SOLVED SILVER (AG) (UG/L) (01075)	DIS-SOLVED STRON-TIUM (SR) (UG/L) (01080)	DIS-SOLVED VANA-DIUM (V) (UG/L) (01085)
JULY	75	18	33	30	~~36000~~	37	720	<10	65	<4	1100	130
AUG., 1974												
28...	0	0	1	--	20	1	0	5	<1	--	--	.8
SEP.												
17...	0	0	2	--	20	2	0	4	1	0	1100	.4
OCT.												
09...	0	0	0	--	20	3	0	3	4	--	--	1.3
22...	--	--	--	--	--	--	--	--	--	--	--	--

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PROCESS DATE 12/12/74

09306400 - WHITE RIVER ABV HELLS HOLE CANYON NR WATSON DISTRICT CODE 49

WATER QUALITY DATA

DATE	DIS-SOLVED ZINC (ZN) (UG/L) (01090)	DIS-SOLVED TIN (SN) (UG/L) (01100)	DIS-SOLVED ALUM-INUM (AL) (UG/L) (01106)	DIS-SOLVED GALLIUM (GA) (UG/L) (01120)	DIS-SOLVED GER-MANIUM (GE) (UG/L) (01125)	DIS-SOLVED LITHIUM (LI) (UG/L) (01130)	DIS-SOLVED SELE-NIUM (SE) (UG/L) (01145)	TOTAL SELE-NIUM (SE) (UG/L) (01147)	DIS-SOLVED TI-TANIUM (TI) (UG/L) (01150)	DIS-SOLVED ZIR-CONIUM (ZR) (UG/L) (01160)	DIS-SOLVED GROSS BETA AS CS-137 (PC/L) (03515)	CHLORO-PHYLL A (UG/L) (32230)
July	270	<30	78,000	28	<30	60	—	1	4800	170	—	—
AUG., 1974												
28...	0	--	10	--	--	25	--	--	--	--	--	--
SEP.												
17...	20	--	10	--	--	25	1	--	--	--	--	4.3
OCT.												
09...	30	--	0	--	--	0	1	--	--	--	4.6	1.0
22...	--	--	--	--	--	--	--	--	--	--	--	--

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PROCESS DATE 12/12/74

09306400 - WHITE RIVER ABV HELLS HOLE CANYON NR WATSON DISTRICT CODE 49

WATER QUALITY DATA

DATE	CHLORO-PHYLL B (UG/L) (32231)	PHENOLS (UG/L) (32730)	METHY-LENE BLUE ACTIVE SUB-STANCE (MG/L) (38260)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L) (70300)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	TOTAL ORTHO PHOS-PHORUS (P) (MG/L) (70507)	DIS-SOLVED AMMONIA (NH4) (MG/L) (71846)	DIS-SOLVED NITRATE (NO3) (MG/L) (71851)	DIS-SOLVED NITRITE (NO2) (MG/L) (71856)	BROMIDE (BR) (MG/L) (71870)
JULY	—	2	.0	—	—	—		.07				
AUG., 1974												
28...	--	--	--	626	618	490	.85	--	.13	.00	.00	.1
SEP.												
17...	5.7	1	.0	609	591	--	.83	--	.01	.00	.00	.1
OCT.												
09...	.6	1	--	489	469	615	.67	--	.04	--	.03	.1
22...	--	1	--	498	481	584	.68	--	.03	.00	.00	.5

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PROCESS DATE 12/12/74

09306400 - WHITE RIVER ABV HELLS HOLE CANYON NR WATSON DISTRICT CODE 49

WATER QUALITY DATA

DATE	TOTAL NITRO-GEN (NO3) (MG/L) (71887)	DIS-SOLVED MERCURY (HG) (UG/L) (71890)	TOTAL MERCURY (HG) (UG/L) (71900)	ELEV. OF LAND SURFACE DATUM (FT. ABOVE MSL) (72000)	DIS-SOLVED GROSS ALPHA AS U-NAT. (UG/L) (80030)	DIS-SOLVED GROSS BETA AS SR90 /Y90 (PC/L) (80050)
JULY	6.2		10			
AUG., 1974						
28...	--	.0	--	--	--	--
SEP.						
17...	--	.0	--	--	--	--
OCT.						
09...	--	.0	--	--	<7.1	3.7
22...	--	--	--	--	--	--

PROCESS DATE 12/12/74

09306430 - EVACUATION CR NR MOUTH NR WATSON UT

DISTRICT CODE 49

WATER QUALITY DATA

DATE	TIME	DEPTH (FT) (00003)	SAMPLE NUMBER (00008)	TEMPER-ATURE (DEG C) (00010)	AIR TEMPER-ATURE (DEG C) (00020)	SURFACE AREA (SQUARE MILES) (00049)	INSTAN-TANEOUS DIS-CHARGE (CFS) (00061)	TUR-BID-ITY (JTU) (00070)	COLOR (PLAT-INUM-COBALT UNITS) (00080)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	DIS-SOLVED OXYGEN (MG/L) (00300)	CHEM-ICAL OXYGEN DEMAND (HIGH LEVEL) (MG/L) (00340)
JULY, 1974												
26...	1700	--	750400	--	--	--	--	70	30	4420	--	33
AUG.												
27...	1430	--	750600	31.0	--	--	.50	--	7	5500	13.0	33
SEP.												
17...	1330	--	--	26.0	--	--	--	--	20	4250	--	30
OCT.												
10...	1500	--	751100	22.5	--	--	.02	--	10	4500	11.3	19
22...	1542	--	--	6.5	--	--	.16	--	--	4710	--	6

09306430 - EVACUATION CR NR MOUTH NR WATSON UT

PROCESS DATE 12/74
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WATER QUALITY DATA

DATE	PH (UNITS) (00400)	CARBON DIOXIDE (CO2) (MG/L) (00405)	ALKA-LINITY AS CACO3 (MG/L) (00410)	BICAR-BONATE (HCO3) (MG/L) (00440)	CAR-BONATE (CO3) (MG/L) (00445)	TOTAL RESI-DUE (MG/L) (00500)	TOTAL FILT-RABLE RESIDUE (MG/L) (00515)	OIL AND GREASE (MG/L) (00550)	TOTAL NITRO-GEN (N) (MG/L) (00600)	ORGANIC NITRO-GEN (N) (MG/L) (00605)	DIS-SOLVED AMMONIA NITRO-GEN (N) (MG/L) (00608)	AMMONIA NITRO-GEN (N) (MG/L) (00610)
JULY, 1974												
26...	8.2	4.3	352	429	0	3900	--	0	1.9	.88	--	.06
AUG.												
27...	8.0	6.8	351	428	0	--	--	--	--	--	.09	--
SEP.												
17...	7.9	9.0	367	447	0	--	--	0	--	--	.09	--
OCT.												
10...	8.2	4.7	382	466	0	--	3600	250	--	--	.12	--
22...	8.0	7.2	368	449	0	--	--	1	--	--	.03	--

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PROCESS DATE 12/12/74

09306430 - EVACUATION CR NR MOUTH NR WATSON UT

DISTRICT CODE 49

WATER QUALITY DATA

DATE	DIS-SOLVED NITRITE (N) (MG/L) (00613)	DIS-SOLVED NITRATE (N) (MG/L) (00618)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L) (00625)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	DIS-SOLVED ORTHO PHOS-PHATE (P04) (MG/L) (00660)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L) (00671)	TOTAL ORGANIC CARBON (C) (MG/L) (00680)	TOTAL IN-ORGANIC CARBON (C) (MG/L) (00685)	CYANIDE (CN) (MG/L) (00720)	DIS-SOL-VED SUL-FIDE (S) (MG/L) (00746)
JULY, 1974												
26...	--	--	.94	1.0	--	--	.09	--	13	45	.00	--
AUG.												
27...	.02	.32	.91	--	.34	.00	.01	.00	--	--	--	.0
SEP.												
17...	.01	.10	1.2	--	.11	.00	.04	.00	13	43	.00	.2
OCT.												
10...	.00	--	.85	--	.00	.00	.01	.00	--	--	.00	.0
22...	.00	.00	1.0	--	.00	.03	.05	.01	--	--	--	.1

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09306430 - EVACUATION CR NR MOUTH NR WATSON UT

PROCESS DATE 12/12/74
DISTRICT CODE 49

WATER QUALITY DATA

DATE	HARDNESS (CA+MG) (MG/L) (00900)	NON-CARBONATE HARDNESS (MG/L) (00902)	DIS-SOLVED CALCIUM (CA) (MG/L) (00915)	TOTAL CALCIUM (CA) (MG/L) (00916)	DIS-SOLVED MAGNESIUM (MG) (MG/L) (00925)	TOTAL MAGNESIUM (MG) (MG/L) (00927)	TOTAL SODIUM (NA) (MG/L) (00929)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	SODIUM ADSORPTION RATIO (00931)	PERCENT SODIUM (00932)	DIS-SOLVED POTASSIUM (K) (MG/L) (00935)	TOTAL POTASSIUM (K) (MG/L) (00937)
JULY, 1974												
26...	--	--	--	190	--	190	700	--	--	--	--	16
AUG.												
27...	1000	660	140	--	160	--	--	710	9.7	60	9.8	--
SEP.												
17...	1000	660	160	--	150	--	--	680	9.3	59	12	--
OCT.												
10...	1100	740	170	--	170	--	--	730	9.5	58	10	--
22...	1100	690	160	--	160	--	--	720	9.6	59	8.9	--

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09306430 - EVACUATION CR NR MOUTH NR WATSON UT

PROCESS DATE 12/12/74
DISTRICT CODE 49

WATER QUALITY DATA

DATE	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	TOTAL FLUO-RIDE (F) (MG/L) (00951)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	DIS-SOLVED ARSENIC (AS) (UG/L) (01000)	TOTAL ARSENIC (AS) (UG/L) (01002)	DIS-SOLVED BARIUM (BA) (UG/L) (01005)	DIS-SOLVED BERYL-LIUM (BE) (UG/L) (01010)	DIS-SOLVED BISMUTH (BI) (UG/L) (01015)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED CAD-MIUM (CD) (UG/L) (01025)
JULY, 1974												
26...	49	2200	--	.8	14	--	4	130	<7	<20	520	<25
AUG.												
27...	49	2100	.8	--	9.5	2	--	0	<6	<20	2200	0
SEP.												
17...	50	2000	.9	--	10	3	--	100	0	--	1900	0
OCT.												
10...	53	2200	.8	--	7.9	2	--	0	--	--	1900	0
22...	55	2200	.9	--	7.9	--	--	--	--	--	--	--

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09306430 - EVACUATION CR NR MOUTH NR WATSON UT

PROCESS DATE 12/12/74
DISTRICT CODE 49

WATER QUALITY DATA

DATE	DIS-SOLVED CHRO-MIUM (CR) (UG/L) (01030)	DIS-SOLVED COBALT (CO) (UG/L) (01035)	DIS-SOLVED COPPER (CU) (UG/L) (01040)	TOTAL COPPER (CU) (UG/L) (01042)	DIS-SOLVED IRON (FE) (UG/L) (01046)	DIS-SOLVED LEAD (PB) (UG/L) (01049)	DIS-SOLVED MAN-GANESE (MN) (UG/L) (01056)	DIS-SOLVED MOLYB-DENUM (MO) (UG/L) (01060)	DIS-SOLVED NICKEL (NI) (UG/L) (01065)	DIS-SOLVED SILVER (AG) (UG/L) (01075)	DIS-SOLVED STRON-TIUM (SR) (UG/L) (01080)	DIS-SOLVED VANA-DIUM (V) (UG/L) (01085)
JULY, 1974												
26...	<10	<20	10	20	2500	<20	100	70	<20	<2	3400	<10
AUG.												
27...	0	0	4	--	20	2	80	57	2	<2	4200	1.2
SEP.												
17...	0	0	4	--	20	2	40	67	2	0	3900	.4
OCT.												
10...	0	0	2	--	30	3	30	53	9	--	--	3.2
22...	--	--	--	--	--	--	--	--	--	--	--	--

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09306430 - EVACUATION CR NR MOUTH NR WATSON UT

PROCESS DATE 12/12/74
DISTRICT CODE 49

WATER QUALITY DATA

DATE	DIS-SOLVED ZINC (ZN) (UG/L) (01090)	DIS-SOLVED TIN (SN) (UG/L) (01100)	DIS-SOLVED ALUM-INUM (AL) (UG/L) (01106)	DIS-SOLVED GALLIUM (GA) (UG/L) (01120)	DIS-SOLVED GER-MANIUM (GE) (UG/L) (01125)	DIS-SOLVED LITHIUM (LI) (UG/L) (01130)	DIS-SOLVED SELE-NIUM (SE) (UG/L) (01145)	TOTAL SELE-NIUM (SE) (UG/L) (01147)	DIS-SOLVED TI-TANIUM (TI) (UG/L) (01150)	DIS-SOLVED ZIR-CONIUM (ZR) (UG/L) (01160)	DIS-SOLVED GROSS BETA AS CS-137 (PC/L) (03515)	CHLORO-PHYLL A (UG/L) (32230)
JULY, 1974												
26...	<20	<20	5000	<5	<20	130	--	1	150	<20	--	--
AUG.												
27...	10	<20	0	<5	<20	120	--	--	<13	<20	--	--
SEP.												
17...	20	--	30	--	--	120	2	--	--	--	--	8.5
OCT.												
10...	10	--	0	--	--	150	1	--	--	--	23	13
22...	--	--	--	--	--	--	--	--	--	--	--	--

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09306430 - EVACUATION CR NR MOUTH NR WATSON UT

PROCESS DATE 12/12/74
DISTRICT CODE 49

WATER QUALITY DATA

DATE	CHLORO-PHYLL B (UG/L) (32231)	PHENOLS (UG/L) (32730)	METHY-LENE BLUE ACTIVE SUB-STANCE (MG/L) (38260)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L) (70300)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	TOTAL ORTHO PHOS-PHORUS (P) (MG/L) (70507)	DIS-SOLVED AMMONIA (NH4) (MG/L) (71846)	DIS-SOLVED NITRATE (NO3) (MG/L) (71851)	DIS-SOLVED NITRITE (NO2) (MG/L) (71856)	BROMIDE (BR) (MG/L) (71870)
JULY, 1974												
26...	--	1	.0	--	--	--	--	.06	--	--	--	--
AUG.												
27...	--	--	--	3570	3390	4.82	4.86	--	.12	1.4	.07	.3
SEP.												
17...	4.2	4	.1	3630	3290	--	4.94	--	.12	.44	.03	.2
OCT.												
10...	5.4	2	--	3890	3570	.21	5.29	--	.15	--	.00	.3
22...	--	3	--	3940	3530	1.70	5.36	--	.04	.00	.00	.3

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09306430 - EVACUATION CR NR MOUTH NR WATSON UT

PROCESS DATE 12/12/74
DISTRICT CODE 49

WATER QUALITY DATA

DATE	TOTAL NITRO-GEN (NO3) (MG/L) (71887)	DIS-SOLVED MERCURY (HG) (UG/L) (71890)	TOTAL MERCURY (HG) (UG/L) (71900)	ELEV. OF LAND SURFACE DATUM (FT. ABOVE MSL) (72000)	DIS-SOLVED GROSS ALPHA AS U-NAT. (UG/L) (80030)	DIS-SOLVED GROSS BETA AS SR90 /Y90 (PC/L) (80050)
JULY, 1974						
26...	8.6	--	.0	--	--	--
AUG.						
27...	--	.0	--	--	--	--
SEP.						
17...	--	.3	--	--	--	--
OCT.						
10...	--	.1	--	--	<52	20
22...	--	--	--	--	--	--

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09306500 - WHITE RIVER NEAR WATSON UTAH

PROCESS DATE 12/12/74
DISTRICT CODE 49

WATER QUALITY DATA

DATE	TIME	DEPTH (FT) (00003)	SAMPLE NUMBER (00008)	TEMPER-ATURE (DEG C) (00010)	AIR TEMPER-ATURE (DEG C) (00020)	SURFACE AREA (SQUARE MILES) (00049)	INSTAN-TANEOUS DIS-CHARGE (CFS) (00061)	TUR-BID-ITY (JTU) (00070)	COLOR (PLAT-INUM-COBALT UNITS) (00080)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	DIS-SOLVED OXYGEN (MG/L) (00300)	CHEM-ICAL OXYGEN DEMAND (HIGH LEVEL) (MG/L) (00340)
JULY, 1974												
18...	1300	--	--	24.0	29.0	4020	467	--	--	700	9.2	--
26...	1900	--	750400	--	--	4020	--	--	--	--	--	--
AUG.												
06...	1745	--	--	26.0	27.0	4020	382	--	--	800	7.7	--
27...	1130	--	750600	19.0	--	4020	280	--	4	900	7.0	9
SEP.												
17...	1100	--	--	15.0	--	4020	--	--	7	740	--	5
OCT.												
09...	1030	--	751200	11.0	--	4020	447	--	40	630	8.5	2
22...	1635	--	--	12.0	--	4020	2.6	--	--	776	--	0
NOV.												
12...	1101	--	--	3.0	12.0	4020	419	--	--	775	--	--

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09306500 - WHITE RIVER NEAR WATSON UTAH

PROCESS DATE 12/12/74
DISTRICT CODE 49

WATER QUALITY DATA

DATE	PH (UNITS) (00400)	CARBON DIOXIDE (CO2) (MG/L) (00405)	ALKA-LINITY AS CACO3 (MG/L) (00410)	BICAR-BONATE (HCO3) (MG/L) (00440)	CAR-BONATE (CO3) (MG/L) (00445)	TOTAL RESI-DUE (MG/L) (00500)	TOTAL FILT-RABLE RESIDUE (MG/L) (00515)	OIL AND GREASE (MG/L) (00550)	TOTAL NITRO-GEN (N) (MG/L) (00600)	ORGANIC NITRO-GEN (N) (MG/L) (00605)	DIS-SOLVED AMMONIA NITRO-GEN (N) (MG/L) (00608)	AMMONIA NITRO-GEN (N) (MG/L) (00610)
JULY, 1974												
18...	7.5	12	189	230	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--	--	--
AUG.												
06...	8.1	3.1	198	241	--	--	--	--	--	--	--	--
27...	8.1	3.0	192	234	0	--	--	--	--	--	.05	--
SEP.												
17...	8.2	2.6	215	262	0	--	--	0	--	--	.01	--
OCT.												
09...	8.3	1.8	184	224	0	--	500	0	--	--	.04	--
22...	7.0	36	184	224	0	--	--	4	--	--	.03	--
NOV.												
12...	8.4	1.5	187	226	1	--	--	--	--	--	--	--

09306500 - WHITE RIVER NEAR WATSON UTAH

PROCESS DATE 12/12/74
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WATER QUALITY DATA

DATE	DIS-SOLVED NITRITE (N) (MG/L) (00613)	DIS-SOLVED NITRATE (N) (MG/L) (00618)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L) (00625)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	DIS-SOLVED ORTHO PHOS-PHATE (PO4) (MG/L) (00660)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L) (00671)	TOTAL ORGANIC CARBON (C) (MG/L) (00680)	TOTAL IN-ORGANIC CARBON (C) (MG/L) (00685)	CYANIDE (CN) (MG/L) (00720)	DIS-SOL-VED SUL-FIDE (S) (MG/L) (00746)
JULY, 1974												
18...	--	--	--	--	.49	2.6	--	.84	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--	--	--
AUG.												
06...	--	--	--	--	.24	.09	--	.03	--	--	--	--
27...	.00	.04	.33	--	.04	.00	.03	.00	--	--	--	.1
SEP.												
17...	.00	.00	.38	--	.00	.00	.04	.00	4.5	32	.00	.3
OCT.												
09...	.01	--	.48	--	.01	.00	.05	.00	--	--	.00	.1
22...	.00	.01	.13	--	.01	.03	.05	.01	--	--	--	.0
NOV.												
12...	--	--	--	--	.00	.06	--	.02	--	--	--	--

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PROCESS DATE 12/12/74

09306500 - WHITE RIVER NEAR WATSON UTAH

DISTRICT CODE 49

WATER QUALITY DATA

DATE	HARDNESS (CA+MG) (MG/L) (00900)	NON-CARBONATE HARDNESS (MG/L) (00902)	DISSOLVED CALCIUM (CA) (MG/L) (00915)	TOTAL CALCIUM (CA) (MG/L) (00916)	DISSOLVED MAGNESIUM (MG) (MG/L) (00925)	TOTAL MAGNESIUM (MG) (MG/L) (00927)	TOTAL SODIUM (NA) (MG/L) (00929)	DISSOLVED SODIUM (NA) (MG/L) (00930)	SODIUM ADSORPTION RATIO (00931)	PERCENT SODIUM (00932)	DISSOLVED POTASSIUM (K) (MG/L) (00935)	TOTAL POTASSIUM (K) (MG/L) (00937)
JULY, 1974												
18...	260	76	68	--	23	--	--	55	1.5	31	2.4	--
26...	--	--	--	--	--	--	--	--	--	--	--	--
AUG.												
06...	310	110	70	--	32	--	--	74	1.8	34	2.5	--
27...	290	98	60	--	34	--	--	90	2.3	40	2.8	--
SEP.												
17...	310	95	74	--	30	--	--	85	2.1	37	3.1	--
OCT.												
09...	270	84	66	--	25	--	--	60	1.6	33	2.0	--
22...	270	87	67	--	25	--	--	67	1.8	35	2.4	--
NOV.												
12...	240	57	60	--	23	--	--	61	1.7	35	.8	--

.32

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09306500 - WHITE RIVER NEAR WATSON UTAH

WATER QUALITY DATA

DATE	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	TOTAL FLUO-RIDE (F) (MG/L) (00951)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	DIS-SOLVED ARSENIC (AS) (UG/L) (01000)	TOTAL ARSENIC (AS) (UG/L) (01002)	DIS-SOLVED BARIUM (BA) (UG/L) (01005)	DIS-SOLVED BERYL-LIUM (BE) (UG/L) (01010)	DIS-SOLVED BISMUTH (BI) (UG/L) (01015)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED CAD-MIUM (CD) (UG/L) (01025)
JULY, 1974												
18...	30	140	.3	--	14	--	--	--	--	--	90	--
26...	--	--	--	--	--	--	--	870	<7	<20	290	--
AUG.												
06...	35	200	.3	--	15	--	--	--	--	--	100	--
27...	42	210	.4	--	12	2	--	0	<3	<10	90	0
SEP.												
17...	53	200	.4	--	14	2	--	0	0	--	100	0
OCT.												
09...	32	160	.2	--	14	4	--	0	--	--	130	<1
22...	35	170	.3	--	12	--	--	--	--	--	--	--
NOV.												
12...	32	150	.3	--	13	--	--	--	--	--	70	--

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09306500 - WHITE RIVER NEAR WATSON UTAH

WATER QUALITY DATA

DATE	DIS-SOLVED CHRO-MIUM (CR) (UG/L) (01030)	DIS-SOLVED COBALT (CO) (UG/L) (01035)	DIS-SOLVED COPPER (CU) (UG/L) (01040)	TOTAL COPPER (CU) (UG/L) (01042)	DIS-SOLVED IRON (FE) (UG/L) (01046)	DIS-SOLVED LEAD (PB) (UG/L) (01049)	DIS-SOLVED MAN-GANESE (MN) (UG/L) (01056)	DIS-SOLVED MOLYB-DENUM (MO) (UG/L) (01060)	DIS-SOLVED NICKEL (NI) (UG/L) (01065)	DIS-SOLVED SILVER (AG) (UG/L) (01075)	DIS-SOLVED STRON-TIUM (SR) (UG/L) (01080)	DIS-SOLVED VANA-DIUM (V) (UG/L) (01085)
JULY, 1974												
18...	--	--	--	--	--	--	--	--	--	--	--	--
26...	82	<15	35	--	39000	34	760	<10	72	<4	1100	130
AUG.												
06...	--	--	--	--	--	--	--	--	--	--	--	--
27...	0	0	2	--	20	2	20	4	1	<1	950	.7
SEP.												
17...	0	0	2	--	20	2	0	4	<1	0	1000	.6
OCT.												
09...	0	0	6	--	270	2	0	2	4	--	--	.6
22...	--	--	--	--	--	--	--	--	--	--	--	--
NOV.												
12...	--	--	--	--	--	--	--	--	--	--	--	--

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PROCESS DATE 12/12/74

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WATER QUALITY DATA

DATE	DIS-SOLVED ZINC (ZN) (UG/L) (01090)	DIS-SOLVED TIN (SN) (UG/L) (01100)	DIS-SOLVED ALUM-INUM (AL) (UG/L) (01106)	DIS-SOLVED GALLIUM (GA) (UG/L) (01120)	DIS-SOLVED GER-MANIUM (GE) (UG/L) (01125)	DIS-SOLVED LITHIUM (LI) (UG/L) (01130)	DIS-SOLVED SELE-NIUM (SE) (UG/L) (01145)	TOTAL SELE-NIUM (SE) (UG/L) (01147)	DIS-SOLVED TI-TANIUM (TI) (UG/L) (01150)	DIS-SOLVED ZIR-CONIUM (ZR) (UG/L) (01160)	DIS-SOLVED GROSS BETA AS CS-137 (PC/L) (03515)	CHLORO-PHYLL A (UG/L) (32230)
JULY, 1974												
18...	--	--	--	--	--	--	--	--	--	--	--	--
26...	250	<30	86000	20	<30	70	--	--	5000	180	--	--
AUG.												
06...	--	--	--	--	--	--	--	--	--	--	--	--
27...	10	<8	20	<4	<11	0	--	--	<5	<12	--	--
SEP.												
17...	20	--	10	--	--	13	1	--	--	--	--	3.2
OCT.												
09...	30	--	10	--	--	0	1	--	--	--	3.5	.8
22...	--	--	--	--	--	--	--	--	--	--	--	--
NOV.												
12...	--	--	--	--	--	--	--	--	--	--	--	--

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PROCESS DATE 12/12/74

09306500 - WHITE RIVER NEAR WATSON UTAH

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WATER QUALITY DATA

DATE	CHLORO-PHYLL B (UG/L) (32231)	PHENOLS (UG/L) (32730)	METHY-LENE BLUE ACTIVE SUB-STANCE (MG/L) (38260)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L) (70300)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	TOTAL ORTHO PHOS-PHORUS (P) (MG/L) (70507)	DIS-SOLVED AMMONIA (NH4) (MG/L) (71846)	DIS-SOLVED NITRATE (NO3) (MG/L) (71851)	DIS-SOLVED NITRITE (NO2) (MG/L) (71856)	BROMIDE (BR) (MG/L) (71870)
JULY, 1974												
18...	--	--	--	--	451	569	.61	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--	--	--
AUG.												
06...	--	--	--	--	549	566	.75	--	--	--	--	--
27...	--	--	--	575	567	435	.78	--	.06	.18	.00	.0
SEP.												
17...	2.5	6	.0	602	590	--	.82	--	.01	.00	.00	.1
OCT.												
09...	.9	0	--	477	470	576	.65	--	.05	--	.03	.1
22...	--	0	--	510	489	3.61	.69	--	.04	.04	.00	.1
NOV.												
12...	--	--	--	--	453	508	.62	--	--	--	--	--

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PROCESS DATE 12/74
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09306500 - WHITE RIVER NEAR WATSON UTAH

WATER QUALITY DATA

DATE	TOTAL NITRO-GEN (NO3) (MG/L) (71887)	DIS-SOLVED MERCURY (HG) (UG/L) (71890)	TOTAL MERCURY (HG) (UG/L) (71900)	ELEV. OF LAND SURFACE DATUM (FT. ABOVE MSL) (72000)	DIS-SOLVED GROSS ALPHA AS U-NAT. (UG/L) (80030)	DIS-SOLVED GROSS BETA AS SR90 /Y90 (PC/L) (80050)
JULY, 1974						
18...	--	--	--	4947	--	--
26...	--	--	--	4947	--	--
AUG.						
06...	--	--	--	4947	--	--
27...	--	.0	--	4947	--	--
SEP.						
17...	--	.0	--	4947	--	--
OCT.						
09...	--	.0	--	4947	6.9	2.9
22...	--	--	--	4947	--	--
NOV.						
12...	--	--	--	4947	--	--

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S-4

09306600 - WHITE R ABV SOUTHAM CAN NR WATSON UT

PROCESS DATE 12/12/74
DISTRICT CODE 49

WATER QUALITY DATA

DATE	TIME	DEPTH (FT) (00003)	SAMPLE NUMBER (00008)	TEMPERATURE (DEG C) (00010)	AIR TEMPERATURE (DEG C) (00020)	SURFACE AREA (SQUARE MILES) (00049)	INSTANTANEOUS DISCHARGE (CFS) (00061)	TURBIDITY (JTU) (00070)	COLOR (PLATINUM-COBALT UNITS) (00080)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	DISSOLVED OXYGEN (MG/L) (00300)	CHEMICAL OXYGEN DEMAND (HIGH LEVEL) (MG/L) (00340)
JULY, 1974												
26...	1630	--	750400	--	--	--	--	1800	40	796	--	110
AUG.												
28...	1200	--	750600	18.0	--	--	289	--	5	1100	8.2	12
SEP.												
18...	1100	--	--	15.5	--	--	--	--	8	900	--	12
OCT.												
08...	1630	--	751200	14.0	--	--	466	--	5	690	--	36
23...	1330	--	--	6.8	--	--	461	--	--	791	--	4

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09306600 - WHITE R ABV SOUTHAM CAN NR WATSON UT

DISTRICT CODE 49

WATER QUALITY DATA

DATE	PH (UNITS) (00400)	CARBON DIOXIDE (CO2) (MG/L) (00405)	ALKA-LINITY AS CACO3 (MG/L) (00410)	BICAR-BONATE (HCO3) (MG/L) (00440)	CAR-BONATE (CO3) (MG/L) (00445)	TOTAL RESI-DUE (MG/L) (00500)	TOTAL FILT-RABLE RESIDUE (MG/L) (00515)	OIL AND GREASE (MG/L) (00550)	TOTAL NITRO-GEN (N) (MG/L) (00600)	ORGANIC NITRO-GEN (N) (MG/L) (00605)	DIS-SOLVED AMMONIA NITRO-GEN (N) (MG/L) (00608)	AMMONIA NITRO-GEN (N) (MG/L) (00610)
JULY, 1974												
26...	8.2	2.6	211	257	0	4330	--	0	5.2	4.8	--	.09
AUG.												
28...	8.1	3.2	208	254	0	--	--	--	--	--	.06	--
SEP.												
18...	8.0	4.2	213	260	0	--	--	2	--	--	.01	--
OCT.												
08...	7.9	4.5	183	223	0	--	510	180	--	--	.04	--
23...	7.0	36	185	225	0	--	--	2	--	--	.03	--

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PROCESS DATE 12/12/74

09306600 - WHITE R ABV SOUTHAM CAN NR WATSON UT

DISTRICT CODE 49

WATER QUALITY DATA

DATE	DIS-SOLVED NITRITE (N) (MG/L) (00613)	DIS-SOLVED NITRATE (N) (MG/L) (00618)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L) (00625)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	DIS-SOLVED ORTHO PHOS-PHATE (P04) (MG/L) (00660)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L) (00671)	TOTAL ORGANIC CARBON (C) (MG/L) (00680)	TOTAL IN-ORGANIC CARBON (C) (MG/L) (00685)	CYANIDE (CN) (MG/L) (00720)	DIS-SOL-VED SUL-FIDE (S) (MG/L) (00746)
JULY, 1974												
26...	--	--	4.9	.30	--	--	1.5	--	12	38	.01	--
AUG.												
28...	.00	.09	.26	--	.09	.00	.08	.00	--	--	--	.3
SEP.												
18...	.00	.01	.79	--	.01	.00	.05	.00	7.0	17	.00	.2
OCT.												
08...	.01	--	.38	--	.01	.00	.06	.00	--	--	.00	.2
23...	.00	.00	.26	--	.00	.00	.05	.00	--	--	--	.1

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PROCESS DATE 12/12/74

09306600 - WHITE R ABV SOUTHAM CAN NR WATSON UT

DISTRICT CODE 49

WATER QUALITY DATA

DATE	HARDNESS (CA,MG) (MG/L) (00900)	NON-CARBONATE HARDNESS (MG/L) (00902)	DISSOLVED CALCIUM (CA) (MG/L) (00915)	TOTAL CALCIUM (CA) (MG/L) (00916)	DISSOLVED MAGNESIUM (MG) (MG/L) (00925)	TOTAL MAGNESIUM (MG) (MG/L) (00927)	TOTAL SODIUM (NA) (MG/L) (00929)	DISSOLVED SODIUM (NA) (MG/L) (00930)	SODIUM ADSORPTION RATIO (00931)	PERCENT SODIUM (00932)	DISSOLVED POTASSIUM (K) (MG/L) (00935)	TOTAL POTASSIUM (K) (MG/L) (00937)
JULY, 1974												
26...	--	--	--	210	--	76	67	--	--	--	--	10
AUG.												
28...	320	110	68	--	36	--	--	130	3.2	47	5.0	--
SEP.												
18...	310	100	76	--	30	--	--	72	1.8	33	3.0	--
OCT.												
08...	260	81	66	--	24	--	--	60	1.6	33	2.0	--
23...	270	81	65	--	25	--	--	68	1.8	36	2.3	--

4/.

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DISTRICT CODE 49

WATER QUALITY DATA

DATE	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	TOTAL FLUO-RIDE (F) (MG/L) (00951)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	DIS-SOLVED ARSENIC (AS) (UG/L) (01000)	TOTAL ARSENIC (AS) (UG/L) (01002)	DIS-SOLVED BARIUM (BA) (UG/L) (01005)	DIS-SOLVED BERYL-LIUM (BE) (UG/L) (01010)	DIS-SOLVED BISMUTH (BI) (UG/L) (01015)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED CAD-MIUM (CD) (UG/L) (01025)
JULY, 1974												
26...	30	170	--	1.0	15	--	45	2100	<13	<40	440	--
AUG.												
28...	120	220	.3	--	11	2	--	0	<3	<12	130	0
SEP.												
18...	39	190	.3	--	14	2	--	0	0	--	90	0
OCT.												
08...	33	160	.2	--	14	2	--	0	--	--	90	0
23...	40	170	.2	--	12	--	--	--	--	--	--	--

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09306600 - WHITE R ABV SOUTHAM CAN NR WATSON UT

PROCESS DATE 12/12/74
DISTRICT CODE 49

WATER QUALITY DATA

DATE	DIS-SOLVED CHRO-MIUM (CR) (UG/L) (01030)	DIS-SOLVED COBALT (CO) (UG/L) (01035)	DIS-SOLVED COPPER (CU) (UG/L) (01040)	TOTAL COPPER (CU) (UG/L) (01042)	DIS-SOLVED IRON (FE) (UG/L) (01046)	DIS-SOLVED LEAD (PB) (UG/L) (01049)	DIS-SOLVED MAN-GANESE (MN) (UG/L) (01056)	DIS-SOLVED MOLYB-DENUM (MO) (UG/L) (01060)	DIS-SOLVED NICKEL (NI) (UG/L) (01065)	DIS-SOLVED SILVER (AG) (UG/L) (01075)	DIS-SOLVED STRON-TIUM (SR) (UG/L) (01080)	DIS-SOLVED VANA-DIUM (V) (UG/L) (01085)
JULY, 1974												
26...	240	40	90	90	98000	87	1700	<20	200	<7	1700	370
AUG.												
28...	0	0	1	--	30	1	20	4	<1	<2	1000	.4
SEP.												
18...	0	0	1	--	40	1	0	3	1	1	1100	.8
OCT.												
08...	0	0	0	--	100	2	0	5	4	--	--	1.4
23...	--	--	--	--	--	--	--	--	--	--	--	--

09306600 - WHITE R ABV SOUTHAM CAN NR WATSON UT

WATER QUALITY DATA

DATE	DIS-SOLVED ZINC (ZN) (UG/L) (01090)	DIS-SOLVED TIN (SN) (UG/L) (01100)	DIS-SOLVED ALUM-INUM (AL) (UG/L) (01106)	DIS-SOLVED GALLIUM (GA) (UG/L) (01120)	DIS-SOLVED GER-MANIUM (GE) (UG/L) (01125)	DIS-SOLVED LITHIUM (LI) (UG/L) (01130)	DIS-SOLVED SELE-NIUM (SE) (UG/L) (01145)	TOTAL SELE-NIUM (SE) (UG/L) (01147)	DIS-SOLVED TI-TANIUM (TI) (UG/L) (01150)	DIS-SOLVED ZIR-CONIUM (ZR) (UG/L) (01160)	DIS-SOLVED GROSS BETA AS CS-137 (PC/L) (03515)	CHLORO-PHYLL A (UG/L) (32230)
JULY, 1974												
26...	800	<600	270000	85	<60	180	--	0	>10000	410	--	--
AUG.												
28...	0	<10	0	<5	<14	60	--	--	<7	<15	--	--
SEP.												
18...	10	--	20	--	--	13	1	--	--	--	--	4.2
OCT.												
08...	10	--	0	--	--	0	2	--	--	--	6.1	.9
23...	--	--	--	--	--	--	--	--	--	--	--	--

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DISTRICT CODE 49

WATER QUALITY DATA

DATE	CHLORO-PHYLL B (UG/L) (32231)	PHENOLS (UG/L) (32730)	METHY-LENE BLUE ACTIVE SUB-STANCE (MG/L) (38260)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L) (70300)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	TOTAL ORTHO PHOS-PHORUS (P) (MG/L) (70507)	DIS-SOLVED AMMONIA (NH4) (MG/L) (71846)	DIS-SOLVED NITRATE (NO3) (MG/L) (71851)	DIS-SOLVED NITRITE (NO2) (MG/L) (71856)	BROMIDE (BR) (MG/L) (71870)
JULY, 1974												
26...	--	5	.0	--	--	--	--	.06	--	--	--	--
AUG.												
28...	--	--	--	717	717	559	.98	--	.08	.40	.00	.4
SEP.												
18...	2.7	1	.0	549	554	--	.75	--	.01	.04	.00	.0
OCT.												
08...	.0	3	--	475	470	598	.65	--	.05	--	.03	.0
23...	--	2	--	503	494	626	.68	--	.04	.00	.00	.1

45

PROCESS DATE 12/12/74
DISTRICT CODE 49

09306600 - WHITE R ABV SOUTHAM CAN NR WATSON UT

WATER QUALITY DATA

DATE	TOTAL NITRO-GEN (NO3) (MG/L) (71887)	DIS-SOLVED MERCURY (HG) (UG/L) (71890)	TOTAL MERCURY (HG) (UG/L) (71900)	ELEV. OF LAND SURFACE DATUM (FT. ABOVE MSL) (72000)	DIS-SOLVED GROSS ALPHA AS U-NAT. (UG/L) (80030)	DIS-SOLVED GROSS BETA AS SR90 /Y90 (PC/L) (80050)
JULY, 1974						
26...	23	--	.1	--	--	--
AUG.						
28...	--	.0	--	--	--	--
SEP.						
18...	--	.4	--	--	--	--
OCT.						
08...	--	.0	--	--	9.7	5.0
23...	--	--	--	--	--	--

SECTION II

AIR QUALITY DATA

METEOROLOGY AND AIR QUALITY MONITORING

A. WORK PERFORMED

1. MONITORING TRAILERS

During October most of AV's activity was devoted to preparation of air quality monitoring sites in the field, to construction of the air quality stations, and to their installation in the field. In addition, discussions and planning meetings were held on the radioactivity program, on carcinogen analysis, and on the measurement of trace metals.

At the time of this writing (28 October), equipment for five of the eight air quality stations and for all four of the purely meteorological stations is in the tract area. Of these, the monitoring trailers have been installed at Sites A-1, A-4, A-7, and A-8, with the Site A-5 trailer and Site A-9 through A-12 anemometers ready for installation in the next few days. The Site A-3 trailer is scheduled to be scheduled to be shipped to Bonanza on 31 October, to be followed by the Site A-2 trailer on about 4 November and the Site A-6 trailer on about 7 November. The 100-foot towers at Sites A-2 and A-6 are scheduled for installation between 29 October and 1 November.

2. METEOROLOGICAL TOWERS

The first data to begin flowing from the system will be meteorological data (wind and temperature) from Sites A-9 through A-12,

which will begin operation during the week of 4 November. The first air quality data from calibrated and stabilized instruments will appear during the week of 11 November. All system components (meteorology, air quality, radiation, noise) should be fully calibrated and operational by 22 November. One of the gas calibration standards to be used in the program was calibrated by an independent laboratory on 21 October.

3. POWER SOURCE

Initial operation of the air quality stations will be on electricity provided by integral propane-fueled generators. These generators were intended to provide backup power in case of commercial electric power failure, but have been assigned the primary power source role until commercial electric power is available later in 1975. It will be very difficult, if not impossible, to maintain 90% air quality data recovery (as required by the lease) on the generator power alone because of the maintenance needs and reliability of such powerplants. The 95% meteorological data recovery requirement will be well nigh impossible to meet under the same conditions, except at the four battery operated stations, thus reasonably rapid installation of commercial power (or of a second generator system) is imperative.

4. RADIOACTIVITY MONITORING

The radioactivity monitoring program details have been finalized, and are presented in the following memorandum to AV from Dr. Stephen Friedland, its radiation consultant. As noted in that memo, a laboratory acceptable to both the AEC and the EPA has been identified for the performance of the radioactivity analyses of particulate matter, water, and soil samples. (AV and VTN have agreed that AV will handle radio-activity analyses for all components to achieve some economy in sample handling.)

5. TRACE METALS AND CARCINOGENS ANALYSES

The comprehensive trace metal list posed by the Area Oil Shale Supervisor in his letter of 27 August has presented problems in finding a reasonably priced analysis technique. The prime candidate at the moment is X-ray fluorescence, which can probably detect all of the elements on the list, and discussions are presently under way with the limited number of laboratories able to perform such analyses. Definition of the analysis approach for carcinogens, and determination of the appropriate laboratory, is still being pursued actively.

B. MEETINGS AND CONTACTS

Three significant meetings were held during the month of October:

1. Dr. Ivar Tombach of AV with Dr. Stephen Friedland on 2 October to finalize the details of the radiation program, which were then submitted in writing in the attached memo of 9 October.

2. Dr. Ivar Tombach of AV with VTN, Sun Oil, and Phillips Petroleum personnel on 1 October at VTN to discuss project costs.

3. Dr. Paul MacCready, Mr. Mike Chan, and Dr. Ivar Tombach of AV with Drs. Jim Pitts and Barbara Finlayson of Eco Science Systems on 27 October concerning carcinogen and trace metals sample collection and analysis procedures and facilities.

C. WORK SCHEDULE

Meteorological data for wind and temperature components will be forthcoming from Sites A-9 through A-12 during the week of 4 November, 1974.

Initial air quality data from calibrated and stabilized instruments will be available during the week of 11 November, 1974.

All system components for meteorology, air quality, radiation, and noise will be fully calibrated and operational by November 22, 1974.

Deliveries of air program equipment purchased by VTN are nearly complete, with the major outstanding item being a radiosonde tracking system.

October 9, 1974

To: Dr. Ivar Tombach, AeroVironment Inc.

From: Dr. Stephen S. Friedland, Consultant

Subject: Nuclear Measurements in the Baseline Data Collection Program for the White River Shale Oil Company.

The level of program required for the nuclear baseline measurements for the White River Shale Oil Company is completely dependent upon whether or not uranium and its decay products will be found. Previously, (Atlas of the Rocky Mountain Region, Rocky Mountain Association of Geologists, Denver, 1972 issue, page 316, published by A. B. Hirschfeld Press, Denver) it was learned that the largest concentration of uranium mines with high quality ore are located in the South Eastern region of the State of Utah. Recently (Denice Dalley, Head of Environmental Health, Health Division of the Social Services Department, Utah State Government, 72 E 4S, Salt Lake City, telephone 801-328-6121) it was learned that uranium mines also exist directly to the north of the program site. From this same source an opinion was expressed that it is believed that the oil shale will contain a significant percentage of uranium. An exact opposite opinion was expressed by Mr. Philip Dodd (U.S.A.E.C., Grand Junction, Colorado, telephone 303-242-8621) that he would be surprised if any uranium existed in the Utah oil shale as none, to his knowledge, has been found in the oil shale located in Colorado.

Accordingly it is felt that until uranium has been detected in the Utah oil shale the program should not be encumbered with the expense of making radon and radon daughter products measurements. If it is determined within the first year of the program that uranium does exist in the area than the nature of the program outlined herein will be expanded.

It is thus proposed that until June 1975 the nuclear baseline measurements shall consist of the following:

Hand Harvey instruments, which have already been ordered, shall be used to insure that selected sites for the proposed typed of measurements are not sites that contain a radioactive anamoly.

AIR: One or more high pressure ionization chambers, PIC, shall be used to record continuously the background radiation. The battery of this equipment can operate the system for a full week.

The site of the PIC shall be changed weekly. At the time of moving the PIC the battery shall be replaced, the used battery put on charge, and the data chart removed and replaced. During the first months of operations it shall be adequate to locate the PIC at the same locations already selected by AeroVironment Inc. for its other measurements.

The reasons for the selection of the PIC has been discussed in a previous report and as of this writing it is understood that the PIC has already been ordered and received. It is further understood that a means of coupling the data recorded by the PIC on the internal strip chart recorder is also to be recorded on the AeroVironment computer recording system.

The data obtained with the PIC is to be integrated so that the total dose per week and per month shall be computed. Fluctuations in the data are to be compared to world activity; e.g. French or Chinese atomic bomb blasts, accidental venting in the U. S. Nevada test site and etc. Any major deviations from a normal background are to be explained. The integrated dose obtained for each month is to be compared to the output of the T.L.D. network, that is also to be installed, and any discrepencies are to be explained.

T.L.D. measurements are to be made with a monthly cycle. The system has been previously discussed and is understood to be on order. T.L.D. sensors are to be located at each AeroVironment Inc. station in multiples of four for each location. Initially, heights of one meter, five meters and higher are to be used; dependent upon the tower accessibility. Readout equipment for the T.L.D. is to be housed at the oil shale site to minimize errors that are produced by virtue of the time in transporting the sensors to a readout station. A spatial variation of the T.L.D. data is to be plotted on the map of the site. The results so obtained are to be intercompared with the integrated dose obtained from the PIC measurements.

Radon measurements shall commence in the summer of 1975. By that date a greater understanding of the problem will have been obtained. If it should turn out that uranium is not a problem then it shall suffice to obtain air samples and to transport them to E.P.A., Las Vegas for analysis. An offer has already been obtained from that office, as a courtesy to the program, to run a limited number of samples for the detection of radon and radon daughter products. If it should turn out that uranium is a problem than the overall program shall be upgraded and a more comprehensive measurements program shall be initiated. (see attached literature in this report).

WATER: One gallon samples of water from the White River shall be obtained and delivered to the Eberline Instrument Company of Santa Fe, New Mexico, telephone 505-571-3232, attn: Mr. Eric Geiger. The samples are to be collected by Dr. Cyrus McKell of Utah State University, Logan, Utah, telephone 801-752-4100 ext. 7266. Two samples per year from four spots distributed evenly throughout the area are to be obtained.

Specifically the following analysis are to be made on each sample.

Gross alpha and beta (dissolved)
Gross alpha and beta (suspended)

S_r^{90}

If the alpha and beta activity are above 30 pC/liter than a Gamma Isotopic Analysis with a Ge(Li) detector shall be required.

For details of the above tests refer to the attached sheets written by the Eberline Instrument Corporation or contact Mr. Eric Geiger of Eberline (505) 471-3232.

SOIL AND FOLIAGE: One pound each of soil and foliage samples are to be collected by Dr. Cyrus McKell and stored in cottage cheese containers. The foliage samples shall be collected once from a half dozen scattered locations on the site. The soil samples shall be obtained from varying depths. Dr. McKell has access to some depths but additional samples should be obtained from the crews obtaining shale from drillings.

The analysis required from Eberline on the soil and foliage samples are as follows:

Gamma Isotopic Analysis with a Ge(Li) detector.

Wet chemistry followed by an analysis for:

Ra^{226}

Pb^{210}

****

ACTIONS REQUIRED:

An open purchase order to:

Eberline Instrument Corporation
Airport Road
Sante Fe, New Mexico
Tel: (505) 471-3232
Attn: Mr. Eric Geiger

to cover a minimum number of the following types of analysis:

8 gross alpha and beta (dissolved)
8 gross alpha and beta (suspended)

2 Sr^{90} water analysis.

24 Gamma Isotopic Analysis with a Ce(Li) detector system.

6 Wet Chemistries Followed by Analysis for Pa^{226} and Pb^{210}.

Contact made with Dr. Cyrus McKell of Utah State University, Logan, Utah, telephone (801) 752-4100 ext. 7266 to arrange for the collection of the water, soil and foliage samples and transfer of same to AeroVironment personnel operating in Vernal.

Transfer of a minimum of six samples at a time to Eberline in Santa Fe, New Mexico.

Oil shale samples are to be obtained from the core holes and brought to E.P.A., Las Vegas for analysis for uranium.

Keep Stephen S. Friedland, 12 Oppenheimer Avenue, Apartment 42 Ramat Aviv, Israel, telephone (03) 414-880 advised of the results from time to time.

SECTION III

BIOLOGICAL DATA

B I R D S

August 22-25 observations by David and Martha Balph

Rockwren	A, Rocky Areas
Loggerhead Shrike	
Rufous-sided Towhee	R
Mourning Dove	C
Turkey Vulture	
Kestrel	
Red-tailed Hawk	
Pinyon Jay	C, Juniper
Gray Flycatcher	
Mtn. Bluebird	C, Sage and Edges
Black-throated Sparrow	C, Sage and Edges
Lark Sparrow	A
Western Kingbird	
Ash-throated Flycatcher	R
Night Hawk	
House Finch	
Violet-green Swallow	R
Bullock's Oriole	R
Yellow Warbler	R
Blue Grosbeak	R
Warbling Vireo	R
Spotted Sandpiper	R
Canyon Wren	R
Eastern Kingbird	R

A = Abundant
C = Common
R = Riparian habitat

List of terrestrial vertebrate species observed by David and Martha Balph on oil shale tracts U-a and U-b or within one mile of tracts, October 12-15, 1974.

I. BIRDS

	Species	Habitat Type(s)	Comments
1.	Sandhill Crane	Riparian	Flock heard calling, night of October 14.
2.	Spotted Sandpiper	Riparian	One individual.
3.	Mourning Dove	Shadscale, greasewood	Occasional individuals--less common than in Aug.-Sept. 1974.
4.	Common Flicker	Juniper	One individual. Subspecies *C.a. cafer*.
5.	Hairy Woodpecker	Riparian	One individual, male.
6.	Horned Lark	Shadscale, riparian	Several flocks, numbering 6-100 birds.
7.	Pinyon Jay	Juniper	Several flocks, numbering 8 - 70 birds.
8.	Black-billed Magpie	Greasewood, riparian	Seen singly or in small flocks.
9.	Black-capped Chickadee	Riparian	One flock of about six birds.
10.	Plain Titmouse	Juniper	A couple of groups of 2-4 birds.
11.	Rock Wren	Cliffs near grease-wood and juniper	Seen singly or in groups of 2-4 birds--less common than in Aug.-Sept. 1974.
12.	American Robin	Riparian	Occasional individuals.
13.	Swainson's Thrush	Riparian	One individual.
14.	Mountain Bluebird	Greasewood	One flock of about ten birds.
15.	Western Meadowlark	Riparian	Two individuals.
16.	Dark-eyed Junco	Juniper, riparian	Several flocks of 10-50 birds. Subspecies *J.h. oreganus*.
17.	White-crowned Sparrow	Riparian	Seen singly or in groups of 2-3 birds.

II. HERPTILES

	Species	Habitat Type(s)	Comments
1.	Eastern Fence Lizard	Shadscale, juniper, greasewood	
2.	Sagebrush Lizard	Greasewood	

III. MAMMALS

1.	Badger	Greasewood	Sign (diggings) only.
2.	Skunk (unidentified species)	Riparian	Sign (tracks) only.
3.	White-tail Antelope Ground Squirrel	Juniper, greasewood	
4.	Golden-mantled Squirrel	Juniper, greasewood	
5.	Ord (?) Kangaroo Rat	Greasewood	Sign (tracks) only.
6.	Deer Mouse	Greasewood, riparian	Nine individuals captured on rodent transects.
7.	Bushytail (?) Woodrat	Juniper	Sign only (evidence of hoarding activity).
8.	Desert Cottontail	Juniper, riparian	
9.	Mule Deer	Riparian	
10.	Domestic Sheep	Shadscale	Sign only.
11.	Domestic Cattle	Riparian	Sign only.

List of terrestrial vertebrate species observed by David and Martha Balph on oil shale tracts U-a and U-b or within one mile of tracts, Nov. 30 - Dec. 3, 1974.

I. BIRDS

	Species	Habitat Type(s)	Comments
1.	Golden Eagle	Cliffs near greasewood	One individual, seen Dec. 2.
2.	Black-billed Magpie	Shadscale, riparian	Seen singly or in flocks of up to eight birds.
3.	Black-capped Chickadee	Riparian	One flock of about 4 birds; also, several individuals in a mixed passerine flock.
4.	Loggerhead Shrike	Shadscale	One individual.
5.	Gray-crowned Rosy Finch	Greasewood	One flock of about 50-100 birds.
6.	Dark-eyed Junco	Riparian	Several individuals in a mixed passerine flock.

II. HERPTILES

No herptiles observed.

III. MAMMALS

1.	Badger	Greasewood	Sign (diggings) only.
2.	Skunk (unidentified species)	Riparian	Sign (tracks) only.
3.	Golden-mantled Squirrel	Juniper	One individual.
4.	Bushytail (?) Woodrat	Juniper	Sign only (evidence of hoarding activity).
5.	Beaver	Riparian	Sign only (freshly cut trees; mud slide).
6.	Desert Cottontail	Shadscale, juniper	Two individuals seen.
7.	Mule Deer	Juniper, greasewood, riparian	Eight animals seen.
8.	Domestic Sheep	Shadscale	Sign only.

Data Recording

Beginning in December eight different sheets for recording data on terrestrial vertebrates were developed. There are as follows:

(1) Bird Data Sheet (labeled Birds in upper left-hand corner)

(2) Herptile Data Sheet (labeled Herps)

(3) Mammal Data Sheet (labeled Mammals)

(4) Rodent Data Sheet (labeled Rodents)

(5) Rodent Toe Clip Sequence Sheet

(6) Bird Species List Sheet

(7) Herp Species List Sheet

(8) Mammal Species List Sheet

Instructions for recording data on each kind of sheet are described below.

1. Bird Data Sheet

This sheet is used when walking a flushing transect for birds.

SITE: Write in class (primary, secondary, or off-site) and vegetation type (shadscale, juniper, greasewood, or riparian). Do not enter data from more than one site on a single page.

OBSERVER: The observer should write his initials here.

MO: Month(s). Do not enter data from more than one bimonthly sampling period on a single page.

YR: Year. 1974 = 74.

DAY: Day of the month. This needs to be filled in only once per transect walk, in the same row as the first observation for the walk. The first day of the month = 01, the tenth = 10; etc.

SPECIES

Record each sighting made on the transect. If positive identification is made at the species level, record the bird's common name (e.g., Black-capped Chichadee). If the bird is not positively identified at the species level, record the scientific name of the genus (e.g., Parus); or, if the genus is not known, record the family (e.g., Paridae); or, if the family is not known, record the order (e.g., Passeriformes). If the order is not known, write X.

If a page is not filled after one walk, begin recording data for the next walk on the first blank line; continue thus until the page is filled before beginning a new page. If no birds are observed during a given transect walk, write NONE in the species column, in the same row that you recorded the day.

DISTANCE

Record the right-angle distance from the transect line at which you first saw the bird, in meters. 1 m = 001; 10 m = 010; 100 m = 100; etc. In estimating distance, disregard the bird's height off the ground.

If you first see a bird off the transect and it then enters the transect, record its right-angle distance from the transect line at the point where it entered the transect. If more than one bird is involved in an observation, record the distance to the center of the group.

NO.: Record the number of individuals of a given species involved in the observation (or, if the species is not known, the number of individuals of the relevant taxon). One bird = 01; ten = 10; etc. To count as a single observation, two or more individuals must be seen together at one time.

COMMENTS: Include here such information as the following (the most important categories are starred):

*(a) Time at which you started and completed the transect walk.

*(b) Where possible, comments on unidentified birds - e.g., their general size or coloration, etc. If you think a bird was probably but not definitely of a given species, enter the species name in this column, not in the species column; or, if the bird was one of two possible species, write the two names here.

*(c) Birds heard calling or singing during the transect walk, but now seen. Information on each of these observations should be written across a row (from half-way through the "species" column to the end of the "comments" column) to save space.

(d) Birds seen off the transect during the transect walk. Such information should be written across the row, as in (c).

(e) Age and/or sex of bird(s) observed, if known for sure.

(f) Behavior - e.g., flying over transect; singing; etc.

(g) Miscellaneous - general weather conditions, if noteworthy for some reason; unusual observations; etc.

X : Do <u>not</u> write in this final column.

2; 3. Herptile Data Sheet; Mammal Data Sheet.

These sheets are used when walking a flushing transect for herptiles or for mammals.

SITE:	Same as for bird data sheet.					
OBSERVER:	"	"	"	"	"	"
NO:	"	"	"	"	"	"
YR:	"	"	"	"	"	"
DAY:	"	"	"	"	"	"
SPECIES:	"	"	"	"	"	"

DISTANCE

Record the right-angle distance from the transect line at which you first saw the animal, in meters. 1 m = 001; 10 m = 010; 100 m = 100; etc. If you first see an animal off the transect and it then enters the transect, record its right-angle distance from the transect line at the point where it entered the transect.

COMMENTS: Include here such information as the following (the most important categories are starred):

*(a) Time at which you started and completed the transect walk.

*(b) Where possible, comments on unidentified animals. If you make an uncertain identification, record the probable (or possible) identity of the animal in this column, not in the species column.

*(c) Animal sign seen on the transect during the transect walk (with a note as to its degree of freshness, where possible); animals heard but not seen during the walk. Information on each of these observations should be written across a row (from half-way through the "species" column to the end of the "comments" column) to save space.

*(d) Group size. If more than one animal of a species are seen together at one time or the transect (e.g., a herd of domestic cattle, or a doe and fawn), record each animal as a separate observation in the "species" column, then indicate group size in the "comments" column.

(e) Animals seen off the transect during the transect walk. Such information should be written across a row, as in (c).

(f) Age and/or sex of an animal, if known for sure; estimated length in cm (small herptiles only).

(g) Behavior

(h) Miscellaneous - general weather conditions, if noteworthy for some reason; unusual observations; etc.

X : Do <u>not</u> write in this final column.

4. Rodent Data Sheet

This sheet is used when running a rodent trapping transect or grid.

SITE: Same as for bird data sheet.

OBSERVER: Same as for bird data sheet.

MO: Same as for bird data sheet.

YR: Same as for bird data sheet.

DAY: Same as for bird data sheet.

SPECIES: Same as for bird data sheet.

AGE: Record the animal's age, using the following code: Adult = A; Immature = I; Unkown = X.

SEX: Record the animal's sex, using the following code: Male = M; Female = F; Unknown = X.

TOE CLIP: If you are running a transect, draw a line through these columns since toe clipping is not done. If you are running a grid (April and August only), record the four-digit toe clip combination of the animal.

TRAP #: If you are running a transect, draw a line through these columns. If you are running a grid, record the number of the trapping stations where the animal was captured. Trapping station #1 = 001, #10 = 010, etc.

CAP. #: If you are running a transect, draw a line through this column. If you are running a grid, record the number of

times the animal has been captured.

COMMENTS: Include here such information as the following (the most important categories are starred):

*(a) Time at which you started and completed the transect or grid.

*(b) Comments on unidentified rodents. If you are not certain or the species of a rodent, record the probable (or possible) species in this column, not in the species column.

*(c) If an animal is found dead in the trap, record this information.

*(d) Miscellaneous - general weather conditions, if noteworthy for some reason; unusual observations; etc.

5. Toe Clip Sequence Sheet

This sheet is for recording toe clip combinations used when running a rodent trapping grid.

SITE: Same as for bird data sheet.

SPECIES: Record the common name (e.g., Deer Mouse).

R: Right hind foot. Outermost toes is #1; innermost toes is #5.

L: Left hind foot. Innermost toe is #1; outermost toe is #5.

DATE: Record the month, day, and year. February 1, 1975 = 02-01-75.

Final column (no heading): Use this column for comments or notes, if needed.

6; 7; 8. Bird Species List Sheet; Mammal Speices List Sheet; Herp Species List Sheet.

These sheets are used to record vertebrate species observed anywhere on the tracts or within 1.6 km of the tracts.

OBSERVER: Same as for bird data sheet.

MO: Same as for bird data sheet.

YR: Same as for bird data sheet.

DAY: Day of the month on which an observation was made. Record the day for each observation. The first day of the month = 01; the tenth = 10; etc.

SPECIES: Common name (e.g., Black-billed Magpie; Mule Deer; Sagebrush Lizard). You need not list species which you've already recorded during transect walks in the same bimonthly sampling period.

COMMENTS: Include here such information as the following:

(a) General location and/or vegetation type in which the observation was made.

(b) Miscellaneous - whether you saw only one, a few, or many individuals of this species; whether you saw the species in more than one habitat type; etc.

The following set of Data Sheets were compiled on the tracts from December 1 to December 20, 1974.

IRDS SITE: [illegible] W-61 OBSERVER: [illegible] MO.: 12 YR.: 74

DAY	SPECIES	DIST. (m)	NO.	COMMENTS	X
	golden eagle	300	01	overcast 5-10mph wind! S 8:30 E 9:03	
6	heard magpie	scolding		eagle	
7	NONE ≈ 1500 sheep on site			clear & cold S: 9:05 E: 9:30	
8	NONE ≈ 400 sheep onsite			clear & cold S: 8:45 E: 9:05	
9	NONE ≈ 500 sheep on site			clear & cold 5-10mph wind – S: 8:40 E 9:01	
0	NONE ≈ 150-200 sheep			overcast S: 8:50 E: 7:12	

MAMMALS SITE: Greasewood 1 WG1 OBSERVER: PEK MO.: 12 YR.: 74

DAY		SPECIES	DIST. (m)			COMMENTS	
1	6	antelope gr. squirrel	0	3	0	partly cloudy warm 0-5mph	S 3:10 E 3:35
		[fresh as of 10 min coyote scat & tracks]					
1	7	NONE ≈ 800 sheep				brief snow squall	S 3:05 E 3:30
		Spoke with sheepherder 1800 sheep on both sites will stay 4-5 days.					
1	8	NONE majority of sheep through grazing transect area. Have moved farther south.			30	overcast & calm 30 sheep still encountered on transect	S 3:35 E 3 55
1	9	NONE no sheep; transect well grazed & manured				partly cloudy gusty wind 10-15 mph	S 4:00 E 4:18
~~2~~ 2	~~8~~ 0	NONE ≈ 200-250 sheep				overcast	S 3:07 E 3:25

MAMMALS SITE: Greenwood-See WG OBSERVER: CVG MO.: 12 YR.: 74

DAY	SPECIES	DIST. (m)	COMMENTS
15	NONE		Clear Sky S 1514 F 1527
16			
17	NONE		Partly cloudy Snow cover S 1520 E 1534
18	NONE		Cloudy S 1510 F 1554
19	NONE		Scattered clouds windy S 1508 E 1522
20	NONE		Cloudy S 1511 F 1522

BIRDS SITE: [illegible] WG-2 OBSERVER: VG MO.: 12 YR.: 74

DAY	SPECIES	DIST. (m)	NO.	COMMENTS	X
1	Golden Eagle	500	01	Partly Cloudy S 0836 F 0749	
16					
17	NONE			Clear Sky S 0904 F 0917	
18	NONE			Clear Sky S 0853 F 0907	
19	NONE			Clear Sky S 0852 F 0909	
20	NONE			Cloudy S 0800 F 0908	

BIRDS SITE: Greasewood WGF3 OBSERVER: CVG MO.: Dec YR.: 74

DAY		SPECIES	DIST. (m)			NO.		COMMENTS	X
1	1	NONE						Partly Cloudy Start 0851 End 0909	
1	2	NONE						Clear Sky Start 0918 End 0931	
1	3	NONE						2-3" snow cover; Cloudy Start 0922 End 0934	
1	4	Loggerhead Shrike	0	0	1	0	1	Clear Sky Snow Cover Start 0939 End 0955	
1	5	NONE						Partly Cloudy Start 0925 End 0934	

MAMMALS

SITE: Government-3 WG-3 OBSERVER: CVG MO.: Dec YR.: 74

T.		SPECIES	DIST. (m)			COMMENTS	
1	1	Coyote skull IC	M	#	m	Scattered clouds east	Start 1612 End 1629
1	2	Desert Cottontail	0	6	0		Start 1514 End 1528
		Desert Cottontail	0	0	7		
1	3	NONE				Snow cover, overcast, slight breeze	Start 1537 End 1548
1	4	Desert Cottontail	0	6	0	Snow cover, scattered clouds	S 1523 E 1544
1	5	NONE				Partly Cloudy	S 1507 E 1515

BIRDS SITE: [illegible] WJ 1 OBSERVER: [illegible] [illegible] 12 [illegible] 74

DAY	SPECIES	DIST. (m)	NO.	COMMENTS	X
16	~~[illegible]~~ Raven	100	01	Partly cloudy S 0920 F 0945	
17	Plain tit	040	01	Clear Sky S 0942 F 1011	
18	Common Bushtit	030	12	Clear Sky S 0938 F 1012	
	Plain tit	007	01		
19	Piñon Jay (75) seen just before starting transect			Clear Sky S 0938 F 1010	
20	NONE			Cloudy S 0932 F 1002	

MAMMALS SITE: Juniper-Prim, WI-1 OBSERVER: CVG MO.: 12 YR.: 74

DAY	SPECIES	DIST. (m)	COMMENTS
16	* Sheep Carcass	8 m	Clear sky off transect S 1551 E 1617
17	NONE		Partly cloudy snow cover windy S 1607 E 1631
18	NONE		Cloudy S 1614 E 1641
19	NONE		Cloudy S 1551 E 1614
20	NONE		Cloudy S 1549 E 1610
	* Drilling water well at X10 and X11		

BIRDS SITE: Juniper-2 WT-2 OBSERVER: CVG MO.: Dec YR.: 74

DAY	SPECIES	DIST. (m)	NO.	COMMENTS	X
11	NONE			Partly Cloudy Start 0817 End 0831	
11					
12	NONE			Clear Sky Start 0845 End 0859	
13	NONE			2-3 Snow Cover; Snowing; stopped Start 0847 End 0859	
14	Plain Tit	002	01	Clear Sky Snow Cover Start 0852 End 0913	
15	NONE			Partly Cloudy Start 0850 End 0905	

MAMMALS SITE: Juniper-2 WJ-2 OBSERVER: CVG MO.: Dec YR.: 74

DAY		SPECIES	DIST. (m)			COMMENTS	
1	1	Desert Wood Rat	0	2	1	Scattered clouds scattered clouds	Start 1534 End 1552
1	2	NONE				Clear Sky	Start 1440 End 1454
1	3	NONE				Snow Cover, windy, overcast	Start 1508 End 1519
1	4	NONE				Clear Sky Snow, Cover	S 1454 E 1515
1	5	NONE				Partly Cloudy	S 1440 E 1452

BIRDS SITE: [illegible] WJ3 OBSERVER: [illegible] MO.: 12 YR.: 74

DAY		SPECIES	DIST. (m)			NO.		COMMENTS	X
1	5	golden eagle same individual as WG1	1	0	0	0	1	overcast S 9:15 5-10m [illegible] E 9:37	
1	6	pinyon jay	0	2	5	2	0	gregarious fuel foraging junipers	
		crow	0	7	5	0	2	flew overhead. jays outscaled on their appearance.	
		unidentified peeling/squeeking soft bursts at 3 ft	not						
		? tit or nuthatch							
1	7	NONE sheep on site ≈ 500						clear & cold S 9:40 E 9:57	
1	8	NONE ≈ 600 sheep on site						clear & cold S 9:20 E 9:34	
1	9	Black-billed magpie	0	7	5	0	1	clear & cold S 9:20 5-10mph wind 9:31	
		"						25-30 sheep grazing on transect.	
2	0	NONE						overcast S 9:30 E 9:42	

MAMMALS SITE: Juniper 3' WJ3 OBSERVER: PEK MO.: 12 YR.: 74

DAY	SPECIES	DIST. (m)	COMMENTS
16	NONE fresh deer track and droppings		partly cloudy warm S 3:50 E 4:07
17	NONE ≈ 800 sheep on site		lull after snow squall S 4:10 E 4:21
18	NONE ≈ 350-400 sheep still grazing transect area		overcast calm S 4:30 E 4:43
19	NONE 30-50 sheep on transect		partly cloudy gusty wind 10-15 mph S 3:25 E 3:32
20	NONE no sheep but area pretty well wasted.		overcast S 4:15 E 4:27

BIRDS SITE: [illegible] WRI OBSERVER: VEK MO.: 12 YR.: 74

DAY		SPECIES	DIST. (m)			NO.		COMMENTS	☒
1	1	heard crow on	opposite			bank		partly cloudy start: 7:25 cold end: 9:40	
1	1	Red-shafted flicker	0	1	0	0	1		
1	2	NONE						clear & cold start: 9:40 end: 9:50	
		heard woodpecker in adjacent area						25-30 canadian geese flew eastwards over transects while I was walking from 2° to 1°!	
1	3	NONE						squall over start: 10:45 began transect end: 11:05 late.	
1	4	Red-Shafted flicker	0	7	0	0	1	clear & cold start: 9:15 end: 9:30	
								heard a woodpecker toward river	
1	5	NONE						overcast cold start: 9:20 end: 9:35	

MAMMALS SITE: Riparian 1° WR OBSERVER: PEK MO.: 12 YR.: 74

DAY		SPECIES	DIST. (m)	COMMENTS	
1	4	NONE		partly cloudy recent coyote start: 4:30 end: 4:45	
1	1↑			arriving. trap line set [presumably coyote] blind set	
1	2	NONE		clear start: 3:50 end: 4:05	
1	3	NONE		overcast 15-25 mph gusty winds 2-3" snow start: 3:30 end: 3:45	
1	4	NONE		clear start. 3:00 end: 3:15	
				fresh evidence of coyote, rabbit deer and mice trapping on site.	
1	5↓				
1		NONE		partly cloudy start. 3:45 end 4:00	

BIRDS SITE: Riparian 7" WRZ OBSERVER: PEK MO.: 12 YR.: 79

DAY	PLOT	SPECIES	DIST. (m)			NO.		COMMENTS	X
1	1	Hairy wood pecker	0	5	0	0	1	overcast cold start 8:15 end 8:40	
		Hairy wood pecker	0	2	5	0	1	possibly same ind. flew across trans.	
1	2	passerine chickadee?	0	7	0	0	2	clear & cold start: 8:45 end: 9:05	
1	3	NONE						lightly snowing 8:35 9:00 squall approach	
								waited till after storm for rip. 1°	
1	4	NONE						clear & cold start: 9:25 end: 8:45	
1	5	Logger-head shrike	0	0	5	0	1	partly cloudy cold start: 8:45 end. 9:05	
1	5↑								

MAMMALS SITE: Riparian 2° WR2 OBSERVER: PEC MO.: 12 YR.: 74

DAY		SPECIES	DIST. (m)			COMMENTS
1	1	cotton-tail rabbit	0	4	5	partly cloudy Start: 3:35 end: 4:00
1	1↑	cotton-tail rabbit	0	5	5	recent coyote activity active trap-line set
						[presumably coyote] blind sets
1	2	cotton-tail rabbit	0	0	1	clear Start: 3:15 end: 3:35
						fresh [illegible] river & along bank
1	3	NONE				overcast 15-25 mph windy wind. start: 2:55 end: 3:20
						a few rabbits have been out traking around on the transect since this morning's snow 2-3".
1	4	NONE				clear start: 3:30 fresh coyote scat end: 3:55
1	4↑					2 rabbits seen on site after completion of transect.
						thank-you strider!
1	5	NONE				partly cloudy start 3:00 end. 3:20.

BIRDS SITE: Riparian Cn WR-3 OBSERVER: CVG MO.: 12 YR.: 74

DAY		SPECIES	DIST. (m)			NO.		COMMENTS	X
0	[illegible]	NONE 2-4 birds were	he	rd	wi	de	ti	ied	
0	5↑								
0	6	Oregon Junco	0	4	5	1	2	Clear sky/ [illegible] of snow on grnd Start 0940 End 0952	
		Golden Eagle	5	0	0	0	1		
0	7	Golden Eagle	7	5	0	0	1	Light snow falling Start 0857 End 0917	
		Kestrel	0	7	5	0	1		
0	8	NONE						Clear sky Start 0843 End 0903	
0	[illegible]	Oregon Junco	0	2	0	1	0	Clear sky Start 0850 End 0913	
0	9↑	Common Bushtit	0	2	5	1	2		

MAMMALS SITE: [illegible] WR3 OBSERVER: [illegible] MO.: 12 YR.: 74

DAY	SPECIES	DIST. (m)	COMMENTS
05	NONE		Start 1602 End 1618
06	Desert Cottontail	001	Clear Sky clear sky Start 1626 1638
	Fresh deer droppings + tracks in the creek bottom		
07	NONE		light snow Start 1544 End 1600
08	NONE		Clear Sky clear sky Start 1555 End 1609
09	NONE		Clear Sky clear sky Start 1545 End 1600

RODENTS SITE: Riparian-off WR-3 OBSERVER: CVG MO.: 12 YR.: 74

DAY		SPECIES	AGE	SEX	TOE CLIP	TRAP #	CAP. #	COMMENTS
0	5	Deer mouse	A	X				[illegible]
		Deer mouse	A	M				[illegible]
		Deer mouse	A	M				[illegible]
		Deer mouse	A	F				
		Deer mouse	A	M				
		Deer mouse	A	X				
0	6	Deer mouse	A	M				Clear sky
		Deer mouse	A	F				
		Deer mouse	A	F				Dead
		Deer mouse	A	M				
		Deer mouse	A	F				Dead
		Deer mouse	A	F				
		Deer mouse	A	F				
		Deer mouse	A	M				
		Peromyscus	X	X				Another midget mouse ½ the size of other mice

BIRDS SITE: Pinning Stand WS-1 OBSERVER: PEK MO.: 12 YR.: 74

DAY	SPECIES	DIST. (m)	NO.	COMMENTS	X
05	NONE			light snow (no watch) power line hum	
05					
06	NONE			partly cloudy cold Start: 8:25 End: 8:50	
07	Golden Eagle	200	01	overcast start: 8:45 snowing lightly end: 9:08	
08	Accipiter cooper's ?	045	01	clear & COLD start: 8:52 end: 9:15	
09	NONE			clear & COLD start: 8:50 heavy frost end: 9:07	

MAMMALS SITE: Shad scale 1° OBSERVER: PEK MO.: 12 YR.: 74

DAY	SPECIES	DIST. (m)	COMMENTS
05	NONE		partly cloudy start: 3:10 end 3:37
06	cotton-tail rabbit	050	clear & warm start: 4:22 end: 4:50
			fresh probing badger? 2 areas rabbit sign
07	cotton-tail rabbit	035	overcast sunning start: 3:30 end: 4:00
08	NONE		clear & cold start: 3:50 end: 4:15
09	NONE		clear start: 4:00 end: 4:30
			golden eagle soaring overhead flew east over 1° transect continued over 2° site & out of view.

BIRDS SITE: Shad secondary WS-2 OBSERVER: PEK MO.: 12 YR.: 74

DAY		SPECIES	DIST. (m)	NO.	COMMENTS	X
0	3	NONE			snowing lightly [no watch]	
0	5 ↑					
0	6	NONE			partly cloudy cold start: 9:55 end: 10:10	
0	7	NONE			overcast snowing lightly start: 9:20 end: 9:35	
0	8	NONE not a creature was stirring, not even a mouse!			clear & cold! start: 8:30 end: 8:47	
0	9	NONE			clear & cold heavy frost start 9:15 end: 9:30	

BIRDS SITE: [illegible] WS-3 OBSERVER: [illegible] MO.: 12 YR.: 74

DAY	SPECIES	DIST. (m)	NO.	COMMENTS	X
05	NONE			Light snow [illegible], light skiff of snow on grnd. low clouds [illegible]	
06	NONE			Scattered clouds 1/4-1/2 in snow on [illegible] Start 0830 End 0848	
07	NONE			[illegible] Start [illegible] End [illegible]51	
08	NONE			Clear sky Start 0925 End 0936	
09	NONE			Clear sky Start 0934 End 0945	

MAMMALS SITE: [illegible] WS-3 OBSERVER: CVG MO.: 15 YR.: 74

DAY	SPECIES	DIST. (m)	COMMENTS
05	NONE		Partly Cloudy Start 1531 End 1531
06	NONE		Clear Sky Start 1542 End 1552
07	NONE		Partly Cloudy Somewhat windy Start 1626 End 1638
08	NONE		Clear Sky Start 1630 End 1639
09	NONE		Clear Sky Start 1632 End 1642

WS-3

RODENTS

SITE: Shadscale - Off WS-3 OBSERVER: CVG MO.: 12 YR.: 74

DAY		SPECIES	AGE	SEX	TOE CLIP	TRAP #	CAP. #	COMMENTS
~~0~~	~~5~~	Deer mouse	A	X				Light snow falling
0	5↑	Deer mouse	A	M				light skiff of snow on ground. Low cloud cover. Mice in good shape
0	6	Deer mouse	A	M				Scattered clouds, 1/4-1/2 in snow cover. Mice
		Deer mouse	A	F				that died were in traps shaded from the
		Deer mouse	A	F				morning sun
		Deer mouse	A	M				Dead
		Deer mouse	A	F				Dead
		Deer mouse	A	M				
		Deer mouse	A	X				
		Peromyscus	X	X				small critter, 1/2 the size of other mice and shelter fat factor
		Deer mouse	A	F				
		Deer mouse	A	M				Dead
		Deer mouse	A	F				
		The traps were extremely hot, they did not snap shut						

MAMMALS

SITE: Shad scale 2° OBSERVER: PEK MO.: 12 YR.: 74

DAY		SPECIES	DIST. (m)			COMMENTS	
~~04~~	04	NONE				start: 4:13 end: 4:28	
05						several dry washes & gulli show recent rabbit sign	5
06		NONE				clear & warm start: 3 end: 3	35 50
07		cotton-tail rabbit	025			overcast 10-15 mph wind gusty field start 4 end: 4	12 30
08		NONE				clear & warm recent rabbit sign start: 425 end: 4:40	
09		cotton-tail rabbit	001			clear skies 5 mph wind start: 3:30 end: 3:50	
		cotton-tail rabbit	145			shod horse tracks crossing transect heading SW	

RODENTS SITE: Stnd scale 1° OBSERVER: PEK MO.: 12 YR.: 74

DAY	SPECIES	AGE	SEX	TOE CLIP	TRAP #	CAP. #	COMMENTS
0 5	deer mouse	A	M				
0 5	deer mouse	A	F				
	deer mouse	A	X				quick little bugger got away
	peromyscus	A	M?				white footed?
	deer mouse	A	M				
	deer mouse	A	M				
	deer mouse	A	F				
	one trap failed to snap						robbed of batting & oats
	deer mouse	A	F	DEAD			
0 6							
0	deer mouse	A	F				site icy & cold sun traps frozen shut
	deer mouse	A	F				
	deer mouse	A	M				
	deer mouse	A	F	DEAD			insect parasites orange red [illegible].
	deer mouse	A	M				
	deer mouse	A	F				
	deer mouse	A	M				
	deer mouse	A	F	DEAD			
	deer mouse	A	M				
	trap snaped						batting & oats robbed
	deer mouse	X	X	DEAD			
	peromyscus	A	M				white footed?
	deer mouse	A	M	DEAD			
	deer mouse	A	X				

ODENTS SITE: Shad Scale 1" OBSERVER: PEK MO.: 12 YR.: 74

DAY	SPECIES	AGE	SEX	TOE CLIP	TRAP #	CAP. #	COMMENTS
06	deer mouse	A	F				
	deer mouse	A	X				escaped before sexing
	deer mouse	A	F				parasites
	trap snapped empty						oats & bolting remain
	TRAPPING SUSPENDED				25%		MORT

JDENTS SITE: Shad secondary OBSERVER: PEK MO.: 12 YR.: 74

DAY		SPECIES	AGE	SEX	TOE CLIP	TRAP #	CAP. #	COMMENTS
0	~~5~~	deer mouse	A	F				
0	5	deer mouse	A	m				
		deer mouse	A	m				
		trap rabbed of bating & continued						
		deer mouse	A	m				
0	6	deer mouse	A	X				traps iced partly cloudy & cold
		deer mouse	A	F				
		deer mouse	A	m		DEAD		
		deer mouse	A	F		DEAD		
		deer mouse	A	F				
		deer mouse	A	m		DEAD		
		deer mouse	A	m				
		deer mouse	A	X				
		deer mouse	A	X		DEAD		
		deer mouse	A	F		DEAD		
		trap rabbed of bating & cats						
		TRAPPING			SUSPENDED			50% mort

OBSERVER: [illegible] MO.: Dec YR.:

DAY		SPECIES	COMMENTS
0	1	Black-billed Magpie	Riparian & Shadscale. Flocks of 5-8. Obs. by MHB & DTB.
0	1	Loggerhead Shrike	Shadscale. Obs. by MHB
0	1	Black-capped Chickadee	Riparian. Obs. by MHB
0	2	Gray-crowned Rosy Finch	Canyon near off-site greasewood. Flock of ca. 50-100.
0	2	Golden Eagle	Greasewood.
~~0~~	~~3~~	~~Gray-crowned Rosy Finch~~	~~Greasewood Hall's Hole (70-80)~~ (Sec - 20)
0	4	~~Gray-crowned Rosy Finch~~	~~Ignatio Stage Stop~~ (5)
		Magpie	" " " (2)
		~~Gray-crowned Rosy Finch~~	~~Juniper X5 100~~
		Coopers Hawk	Juniper G-7
0	5	Golden Eagle	Juniper WI-1 North
	5	Golden Eagle	Riparian WR-3 (2)
		Oregon Junco	Riparian WR-3 (5)
0	8	Common Bushtit	Riparian (WR-3) (10) Seen while walking Mammal transect
1	1	Black Rosy Finch	Ignatio Stage Stop (25-30)
1	7	Great Horned Owl	Juniper near X5 (1)
		Peregrine Falcon	Juniper WI-1 (1)
		Raven	Ignatio Stage Stop (2)
1	8	Horned Lark	Security check station, Shadscale (30-40)
		Scrub Jay	WG-1 + WI3 (1)

MAMMAL SPECIES LIST OBSERVER: -VG MO.: Dec YR.: 74

DAY		SPECIES	COMMENTS
0	1	Mule Deer	Shadscale; riparian (sign). Obs. by DFE & MHE
0	1	Beaver	Riparian. Sign only (freshly cut trees & mud slide). Obs. DFE & MHE
0	1	White-tailed Antelope Ground Squirrel	Juniper. Obs. by DFE & MHE.
0	1	Desert Cottontail	Shadscale. Obs. by DFE.
0	3	Desert Cottontail	Greasewood - [illegible] Sec-20 (3)
0	3	Antelope Ground Squirrel	Shadscale near A-8
0	4	Sheep	Juniper at G-19 1000?
0	2	Muskrat	Riparian in White River
1	4	Cattle	Ignatio Stage Stop (2) white faced angus
		Bat Guano west of S-13 along	rock face, 10-50 bats

MAMMAL SPECIES LIST OBSERVER: [illegible] MO.: 12 YR.: 74

DAY		SPECIES	COMMENTS
0	2	mule deer 1, 2pt buck 6 does	hells hole ? S-5
0	3	mule deer 7 does	S-5
		sheep herd ≈ 1000	drive heading South from ignatio stage stop
1	2	Coyote suprised him while walking on road	4 dead adult coyote carcass
			1 pup carcass, 2 deer & 2 porcupine found along cliffs behind
			1° & 2° riparian sites. evidence of
			trapping.
1	3	Beaver	river west of 1° Riparian
1	4	racoon	trapper informed me of this animal removed from his trapline.
			trapper - purple pick-up & camper
			Utah liscense SW 7435
			promised to inform VIN vernal of animals trapped & removed from
			riparian 1° & 2°
1	9	Badger	Wagon hound Canyon 1/2 mi from Ignatio

BIRD SPECIES LIST OBSERVER: [illegible] MO.: 12 YR.: 74

DAY	SPECIES	COMMENTS
0 3	black-billed magpie	stage stop
	red-shafted flicker	evac. creek G-8 [bridge]
	red-shafted flicker	2 at G12
	junco	S-6 flock of 7-10
	golden eagle	~~? hells hole~~ S-5
0 5	golden eagle	near F-2 site roosting on pipeline suspension bridge
0 6	golden eagle	again near pipeline suspension bridge cliffs west of road
1 0	golden eagles	8 in Asphalt wash
1 2	golden eagle	old mine site on way to riparian 1° & 2°
1 3 ↓	falcon ?	bluffs behind riparian 2°
X	golden eagles [2]	midway between mine and 1° & 2° Riparian after snow squall
1 5	golden eagle	1 mi. off wagon Mount Canyon Rd towards riparian.

TERRESTRIAL INVERTEBRATES

The number of species collected in each family is presented in the following list:

INSECTA - 943

ODONATA - 4
- Coenagrionidae - 2
- Lestidae - 1
- Libellulidae - 1

ORTHOPTERA - 8
- Acrididae - 4
- Tettigoniidae - 1
- Gryllidae - 2
- Mantidae - 1

STREPSIPTERA - 1
- Stylopidae - 1

THYSANOPTERA - 4
- Aelolothripidae - 1
- Phloeothipidae - 1
- Thripidae - 2

TRICHOPTERA - 2
- Hydropsychidae - 1
- Leptoceridae (?) - 1

NEUROPTERA - 10
- Chrysopidae - 5
- Hemerobiidae - 3
- Myrmelionidae - 1
- Coniopteridae - 1

LEPIDOPTERA - 16
- Pieridae - 1
- Papilionidae - 1
- Nymphalidae - 1
- Satyridae - 1
- Hesperiidae - 3
- Aegeriidae - 2
- Noctuidae - 1
- Misc. families - 6

HEMIPTERA (Heteroptera) - 50
- Pentatomidae - 4
- Phymatidae - 2
- Reduviidae - 2
- Nabidae - 1
- Coreidae - 2
- Lygaeidae - 9
- Corimelaenidae - 1
- Saldidae 2
- Piesmidae - 1
- Miridae - 26

HEMIPTERA (Homoptera) - 64

- Cicadellidae - 45
- Fulgoridae - 7
- Cercopidae - 1
- Psyllidae - 4
- Membracidae - 4
- Aleurodidae - 1
- Aphididae - 2

COLEOPTERA - 153

- Malachiidae - 5
- Dasytidae - 4
- Mordellidae - 4
- Buprestidae - 2
- Coccinellidae - 8
- Phalacridae - 5
- Bruchidae - 1
- Dermestidae - 1
- Pselaphidae - 1
- Colydiidae - 1
- Endomychidae (?) - 2
- Cleridae - 1
- Anthicidae - 8
- Ptiliidae (?) - 1
- Monotomidae - 1
- Tenebrionidae - 10
- Meloidae - 5
- Rhipiphoridae - 1
- Bothrideridae (?) - 1
- Lathridiidae - 2
- Lampyridae - 1
- Scarabaeidae - 9
- Heteroceridae - 2
- Oedemeridae - 3
- Hydrophyllidae - 6
- Dytiscidae - 3
- Carabidae - 19
- Cicindellidae - 1
- Staphylinidae - 22
- Chrysomelidae - 14
- Curculionidae - 9

HYMENOPTERA - 344

- Chalcididae - 3
- Enlophidae - 26
- Pteromalidae - 23
- Perilampidae - 2
- Mymaridae - 3
- Encyrtidae - 19
- Misc. chalidoids - 11

Hymenoptera (Continued)

- Cynipidae - 9
- Ichneumonidae - 9
- Braconidae - 30
- Platygasteridae - 7
- Diapriidae - 2
- Scelionidae - 6
- Misc. families - 4
- Andrenidae - 14
- Anthophoridae - 11
- Apidae - 2
- Megachilidae - 12
- Halictidae - 19
- Colletidae - 6
- Sphecidae - 79
- Vespidae - 10
- Scoliidae - 1
- Tiphiidae - 3
- Mutillidae - 7
- Formicidae - 8
- Chrysididae - 4
- Bethylidae - 3
- Pompilidae - 11

DIPTERA - 287

- Sciaridae - 8
- Mycetophilidae - 1
- Scatopsidae - 1
- Simuliidae - 2
- Cecidomyidae - 8
- Empidae - 10
- Stratiomyidae - 2
- Tabanidae - 1
- Therevidae - 1
- Syrphidae - 8
- Conopidae - 5
- Pipunculidae - 1
- Tachinidae - 24
- Sarcophagidae - 13
- Muscidae - Anthomyidae - 17
- Calliphoridae - 1
- Ephydridae - 17
- Chloropidae - 21
- Tephritidae - 9
- Otitidae - 3
- Dolichopidae - 26
- Agromyzidae - 8
- Milichiidae - 5
- Sphaeroceridae - 3
- Sepsidae - 1

Diptera (continued)

- Lauxaniidae - 1
- Chaemamyiidae - 3
- Tethinidae - 2
- Sciomyzidae - 1
- Trixoscelidae - 1
- Drosophilidae - 1
- Astaeidae - 2
- Bombyliidae - 32
- Asilidae - 6
- Culicidae - 2
- Chinonomidae -16
- Ceratopogonidae - 24

AQUATIC STUDY

The accompanying information consists of raw data gathered during the first sample period conducted during October and November, 1974. These data must be considered as preliminary; a limited number of collections were taken at the first stations and verification of taxonomy by outside specialists is pending.

A question mark following a generic or specific name indicates that identification is not certain.

		Station F-1	October 9, 1974	Surber No. 1
Genus	Species	Family	Order	Number in Sample
Baetis	sp.	Baetidae	Ephemeroptera	2
Rhithrogena	sp.	Heptageniidae	Ephemeroptera	2
			Total	4
				43 organisms/ square meter
		Station F-1	October 9, 1974	Surber No. 2
Ophiogomphus	severus	Gomphidae	Odonata	1
				10 organisms/ square meter
		Station F-2	October 9, 1974	Surber No. 1
Rhithrogena	undulata (?)	Heptageniidae	Ephemeroptera	6
Heptagena	sp.	Heptageniidae	Ephemeroptera	1
Baetis	bicaudatus (?)	Baetidae	Ephemeroptera	3
Ophiogomphus	severus	Gomphidae	Odonata	1
Simulium	sp. (pupa)	Simuliidae	Diptera	1
Simulium	sp. (larvae)	Simuliidae	Diptera	1
Isogenus	sp.	Perlodidae	Plecoptera	4
Pelopia	sp. (pupa)	Chironomidae	Diptera	1
Hydropsyche	sp.	Hydropsychidae	Trichoptera	3
		Lumbriculidae	Prosopora (Annelida)	1
				22
				235 organisms/ square meter

Station F-2 October 10, 1974 Surber No. 2

Genus	Species	Family	Order	Number in Sample
Rhithrogena	undulata	Heptageniidae	Ephemeroptera	10
Heptagena	sp.	Heptageniidae	Ephemeroptera	9
Baetis	bicaudatus	Baetidae	Ephemeroptera	4
Lachlania	Powelli (exuvium)	Baetidae	Ephemeroptera	1
Hydropsyche	sp.	Hydropsychidae	Trichoptera	2
Brachycentrus	sp.(case only)	Brachycentridae	Trichoptera	
Isgenus	sp. (larvae)	Perlodidae	Plecoptera	2
Simulium	sp. (pupae)	Simuliidae	Diptera	2
				33

355 square/meter

Station F-2 October 10, 1974 Surber No. 3

Ophiogomphus	severus	Gomphidae	Odonata	1
Isogenus	sp.	Perlodidae	Plecoptera	2
Baetis	sp.	Baetidae	Ephemeroptera	2
Hydropsyche	sp.	Hydropsychidae	Trichoptera	1
Traverella	albertana	Baetidae	Ephemeroptera	7
Simulium	sp.	Simuliidae	Diptera	1
		Chironomidae	Diptera	1
				15

15 organisms/ square meter

Station F-2 October 10, 1974

Qualitative collections (handpicked or washed from stones and debris)

Brachycentrus Sp.	Trichoptera	
Hydropsychidae Sp.	Trichoptera	
Aelosoma (?) Sp.	Class Annelida	(Segmented worms)
Chironomidae larvae	Diptera	

Station F-3			October 10, 1974	Surber No. 1
Ephemerella sp.		Baetidae	Ephemeroptera	3
Baetis sp.		Baetidae	Ephemeroptera	4
Rhithrogena sp.		Heptageniidae	Ephemeroptera	3
	Subimage (drift)	Baetidae	Ephemeroptera	1
Arcynopteryx sp.		Perlodidae	Plecoptera	1
Hydropsyche sp.		Hydropsychidae	Trichoptera	1
		Chironomidae	Diptera	4
			Total	17
				2

182 organisms/square meter

Station F-3 October 10, 1974 Surber No.2

Genus	Species	Family	Order	Number in Sample
Ephemerella	sp.	Baetidae	Ephemeroptera	2
Traverella	albertana	Baetidae	Ephemeroptera	1
Baetis	bicaudatus	Baetidae	Ephemeroptera	22
Caenis	sp.	Baetidae	Ephemeroptera	1
Rhithrogena	sp. undulata(?)	Heptageniidae	Ephemeroptera	8
Heptagena	sp.	Heptageniidae	Ephemeroptera	21
Hydropsyche	sp.	Hydropsychidae	Trichoptera	1
Isogenus	sp.	Perlodidae	Plecoptera	3
Simulium	sp. (pupae)	Simuliidae	Diptera	3
Simulium	sp. larvae	Simuliidae	Diptera	13
	larvae	Chironomidae	Diptera	3
	pupae	Chironomidae	Diptera	1
			Total	79

Number per square meter--850

Station F-3 October 10, 1974 Surber No. 3

Genus	Species	Family	Order	Number in Sample
Heptagena	sp.	Heptageniidae	Ephemeroptera	4
Rhithrogena	undulata (?)	Heptageniidae	Ephemeroptera	1
Baetis	bicaudatus (?)	Baetidae	Ephemeroptera	7
Ephemerella	sp.	Baetidae	Ephemeroptera	1
Traverella	albertana	Baetidae	Ephemeroptera	4
Isogenus	sp.	Perlodidae	Plecoptera	1
Taenionema	pacifica	Perlidae	Plecoptera	1
Hydropsyche	sp.	Hydropsychidae	Trichoptera	27
Simulium	sp. pupa	Simuliidae	Diptera	1
	larvae	Simuliidae	Diptera	1
	larvae	Chironomidae	Diptera	2
			Total	50

Number per square meter=538

Station F-4 12 October, 1974 Surber No. 1

Genus	Species		Family	Order	Number in Sample
Rhithrogena	undulata		Heptageniidae	Ephemeroptera	13
Baetis	sp		Baetidae	"	2
Ephemerella	sp.		"	"	1
Hydropsyche	sp.		Hydropsychidae	Trichoptera	1
Arcynopteryx	sp.		Arcynopteryx	Plecoptera	1
Simulium	sp.	pupa	Simuliidae	Diptera	1
		larva	"	"	1-
				Total	20
				Number per square meter=	214

Station F-4 12 October, 1974 Surber No. 2

Rhithrogena	undulata	(?)	Heptageniidae	Ephemeroptera	13
Heptagena	sp.		"	"	4
Baetis	sp.		Baetidae	"	2
Ephemerella	sp.		"	"	1
Hydropsyche	sp.		Hydropsychidae	Trichoptera	1
Isogenus	sp.		Perlodidae	Plecoptera	1
Simulium	sp.		Simuliidae	Diptera	2
				Total	24
				Number per square meter=	258

Station F-4 Surber No. 3 October 12, 1974

Genus	Species	Family	Order	Number in Sample
Heptagena	sp.	Heptageniidae	Ephemeroptera	2
Rhithrogena	undulata (?)	Heptageniidae	Ephemeroptera	15
Baetis	bicaudatus	Baetidae	Ephemeroptera	2
Traverella	albertana	Baetidae	Ephemeroptera	3
			Plecoptera (unidentifiable)	1
Simulium	sp. pupae	Simuliidae	Diptera	4
	sp. larvae	Simuliidae	Diptera	3
			Total	30

Number per square meter=323

Station F-4 Surber No. 4 October 12, 1974

Heptagena	sp.	Heptageniidae	Ephemeroptera	5
Rhithrogena	sp.	Heptageniidae	Ephemeroptera	7
Baetis	bicaudatus (?)	Baetidae	Ephemeroptera	1
Arcynopteryx	sp.	Perlodidae	Plecoptera	2
			Total	15

Number per square meter=215

Station F-5 October 11, 1974 Surber No. 1

Genus	Species	Family	Order	Number in Sample
Heptagena	sp.	Heptageniidae	Ephemeroptera	14
Baetis	sp.	Baetidae	"	2
Traverella	albertana	"	"	8
Arcynopteryx	sp.	Perlodidae	Plecoptera	3
		Chironomidae	Diptera	2
Simulium (?)	sp.	Simuliidae	"	2
			Total	31

Number per square meter=312

Station F-5 October11, 1974 Surber No. 2

Heptagena	sp.	Heptageniidae	Ephemeroptera	3
Baetis	sp.	Baetidae	"	2
		Chironomidae	Diptera	1
			Total	6

Number per square meter =64

Station F-5 October 11, 1974 Surber No. 3

Genus	Species	Family	Order	Number in Sample
Heptagena	sp.	Heptageniidae	Ephemeroptera	2
Rhithrogena	undulata (?)	Heptageniidae	Ephemeroptera	4
Baetis	sp.	Baetidae	Ephemeroptera	2
Traverella	albertana	Baetidae	Ephemeroptera	4
Gomphus	intricatus	Gomphidae	Odonata	1
Arcynopteryx	sp.	Perlodidae	Plecoptera	1
Hydropsyche	sp.	Hydropsychidae	Trichoptera	2
		Chironomidae	Diptera	3
		Simuliidae	Diptera	1
			Total	20

Number per square meter=215

Station F-5 October 11, 1974 Surber No. 4

Heptagena	sp.	Heptageniidae	Ephemeroptera	2
Arcynopteryx	sp.	Perlodidae	Plecoptera	1
			Total	3

Number per square meter=32

Station F-1	November 11, 1974	Ekman No. 1
Organism	Number in Sample	
Chironomidae	68	
Ceratopogonidae	1	
Lumbriculidae (Annelida)	15	
	84	3620/ square meter

Station F-1	November 11, 1974	Ekman No. 2
Chironomidae	165	
Lumbriculidae (Annelida)	13	
Ceratopogonidae (Diptera)	2	
	180	7758/square meter

Station F-1	November 11, 1974	
Chironomidae	78	
Ceratopogonidae	1	
Lumbriculidae	5	
	84	3620/square meter

Sample number 1 taken in silty sand at surface water Station S-1. Samples two and three were taken about 30 meters upstream in sandy silt.

Station F-3	November 7, 1974	Ekman No. 1
Ophiogomphus severus (Odonata)	1	
Chironomidae (Diptera)	88	
Ceratopogonidae (Diptera)	2	
	91	3922/square meter

		Ekman No. 2
Chironomidae	127	
Ceratopogonidae	1	
	128	5660/ square meter

Station F-4 November 11, 1974 Ekman Sample No. 1

Chironomidae	(Diptera)	11	
Lumbriculidae	(Annelida)	1	
Ceratopogonidae	(Diptera)	8	
		20	862/ square meter

Station F-5 November 7, 1974 Ekman Sample No. 1

Gomphus intricatus	(Odonata)	1	
Chironomidae		15	
Ceratopogonidae		4	
		20	862/square meter

Mountain Fuel Station Bridge (not a regular station)

Chironomidae	287	12,370/square meter

Station F-6 (Evacuation Creek) November 12, 1974

Only qualitative collections were made in Evacuation Creek. Current was inadequate for the use of a Surber sampler; substrate was too coarse to permit proper operation of the Ekman dredge. Insects were handpicked or captured with a hand plankton net.

Agabus sp. Dytiscidae, (Coleoptera) Common

Limnophora aequifrons (Anthyomiidae, Diptera) Abundant

Baetis sp. (Baetidae, Ephemeroptera) Abundant

Corixa sp. (Corixidae, Hemiptera) Common

Limnephilidae (Trichoptera) common. These are found only on the submerged undersides of shale ledges.

Culex salinarius (Culicidae, Diptera) Common

Callibaetis sp. Common.

Simulium sp. (Simuliidae, Diptera) Abundant

Tabanus sp. (Tabanidae, Diptera) Rare

Station F-6 Evacuation Creek Algae

The following genera of algae, diatoms, and protista were collected in Evacuation Creek on several dates during October and November, 1974.

Mougeotia
Cocconeis
Ulothrix
Microspora
Zygnema
Cymbella
Stauroneis
Navicula
Merismopedia
Synedra
Diatoma
Euglena

The genera are listed in their approximate order of abundance. Only one, or a few specimens of the last three genera were observed.

PLANKTON

Station F-1 October 10, 1974

Strip counts (50 mm^2 each strip)

Strip	Count
1	53
2	101
3	229
4	118
Total	501

Genera Present

Filamentous algae	Diatoms
Cladophora	Cocconeis
Rhizoclonium	Cymbella
Spirogyra	Diatoma
	Navicula
	Surirella
	Gomphonema
	Gyrosigma
	Schroderia setigera

Enumeration factor = 5 501 X 5 = 2505 cells/ml concentrate.

25 ml sample X 2505 cells/ml = 62,625 cells per sample.

2200 ml per original sample = 28 ± cells or filaments per milliliter.

Spirogyra sp.--10 cells/ml. concentrate
others unidentifiable due to dessication; 200 cells/ml. concentrate

Station F-2

Strip	Count
1	27
2	11
3	17
4	8
Total	63

Genera Present

Spirogyra sp. 35 cells/ml
Ulothrix sp. 10 cells/ml
Vaucheria sp. 5 cells/ml

Tabellaria sp. 20 cells/ml

Unidentifiable cells

Enumeration factor = 5. 63 X 5 = 315 cells/ml

315 cells/ml X 50 ml = 15,750

cells per sample (2200 ml sample)

Station F-3

Strip	Count	Genera Present
1	12	Spirogyra the only recognizable organism: about 10 cells/ml. of the concentrated sample.
2	11	
3	12	
4	7	
	42	

Enumeration factor = 5 42 X 5 = 210 cells/ml in concentrate.
50 ml. sample X 210 cells/ml. = 10,500 cells in entire 2200 ml. sample: about 5 cells per milliliter.

Station F-4

Strip	Count	Genera Present
1	27	Cladophora: 12 cell/ml. concentrate Cocconeis : 8 cell/ml. concentrate
2	17	Navicula : 3 cell/ml. concentrate
3	15	
4	17	
	76	

Enumeration factor = 5. 76 X 5 = 380 cells/ml. concentrate.
380 cells/ml. X 50 ml. concentrate = 19,000 cells in the sample, or about 8.6 cells per milliliter of water.

Station F-5

Strip	Count
1	22
2	31
3	29
4	27
	109

Enumeration factor = 5. 109 X 5 = 545 cells/ml of concentrate.

50 ml. concentrate X 545 cells/ml. concentrate = 27, 250 cells per entire sample, or 12± cells/ ml. in the original sample.

Genera present

Unidentified	194/ ml.
Cladophora	76/ ml.
Navicula	41/ml.
Spirogyra	41/ ml.
Cocconeis	41/ml.
Cymbella	14/ml.
Surirella	14/ml.
Rhizoclonium	7/ml.
Gyrosigma	7/ml.
Gomphonema	7/ml.
Scroderia setigera	7/ml.
Ceratium	7/ml
Tabellaria	7/ml.

Station F-1 October 15, 1974

Fish collected by shocking along both banks for approximately 1000 feet.

Pantosteus discobulus (delphinus) Bluehead sucker	2
Catostomus latipinnis Flannelmouth sucker	10
Rhinichthys osculus Speckled dace	4
Notropis lutrensis Red shiner	5

Station F-3 October 16, 1974

Catostomus latipinnis Flannelmouth sucker	26
Pantosteus discobulus (delphinus) Bluehead sucker	2
Gila robusta Roundtail chub	2
Cyprinus carpio Carp	1
Rhinichthys osculus Speckled dace	10
Notropis lutrensis Red shiner	16

Station F-4 October 17, 1974

Pantosteus discobulus (delphinus) Bluehead sucker	2
Catostomus latipinnis Flannelmouth sucker	43
Gila robusta Roundtail chub	1
Rhinichthys osculus Speckled dace	33

Station F-4 (cont.)

Pimepheles promelas Fathead minnow	24
Notropis lutrensis Red shiner	37

Station F-5 October 17, 1974

Immediately upstream of Surface Water Station S-11 on Section 23, T-10S, R. 23 E.

Catostomus latipinnis Flannelmouth sucker	27
Pantosteus discobulus (delphinus) Bluehead sucker	14
Rhinichthys osculus Speckled dace	40
Gila robusta Roundtail chub	1
Notropis lutrensis Red shiner	14
Pimepheles promelas Fathead minnow	7

SECTION IV

GEOLOGIC DATA

(Forthcoming)

SECTION V

HISTORIC AND SCIENTIFIC INVESTIGATIONS DATA

Antiquity Section **SITE SURVEY SHEET** *Division of State History*

Archeological Survey

Site No. 42Un324 County Uintah State Utah

1. Map Reference Southam Canyon Quad, USGS, 7.5 min.
2. Type of Site Rock Shelter
3. Cultural Affiliation (if known)
4. Location Straight east of Southam Canyon 2.5 miles and west of Evacuation Creek 1 mile. 1.25 miles SE of White River.
   Sec. SE¼, NE¼, 23 T. 10S R. 24E
5. Owner and Address BLM
6. Previous Owners ---
7. Tenant none
8. Informants none
9. Previous Designations for Site BLM # AR43-08-41
10. Site description, position, & surrounding terrain Very slight overhang with southern exposure, partial projectile point, very few chips, some bone and charcoal. Trash appears very light, if any, and occupation short. However, sand fill appears deep and interlaced with charcoal.
11. Area of Occupation 130'x12'
12. Depth and Character of Fill see #10
13. Present Condition good
14. Material Collected none.
15. Material Observed see #10
16. Material Reported and Owner none
17. Recommendations for Further Work none
18. Photo Nos. BLM roll 1 number 12 & 13
19. Type of map made by survey party

Recorded by Richard V. Fike Date 11-12-72

Antiquity Section

SITE SURVEY SHEET

Archeological Survey

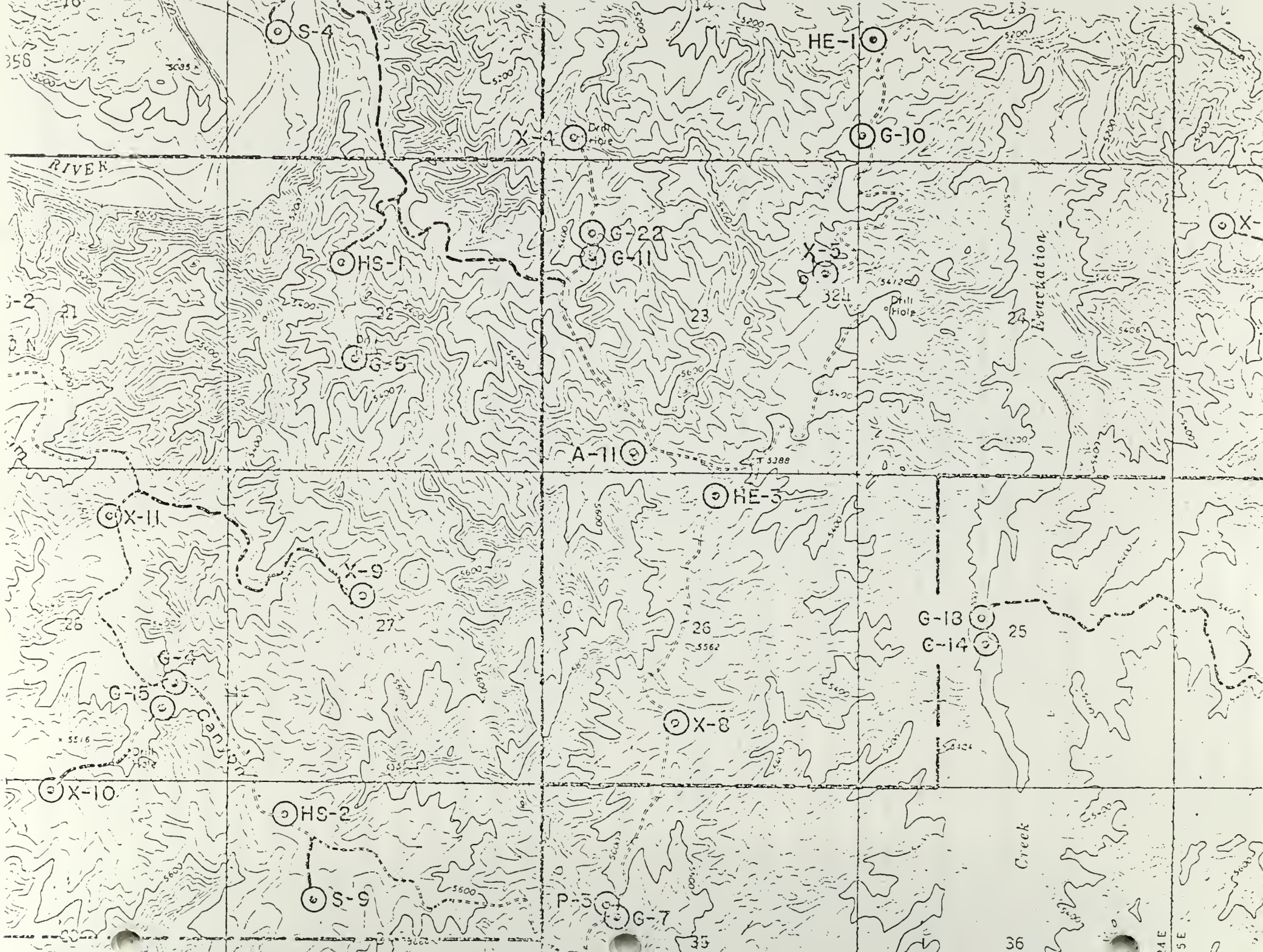
Division of State History

Site No. 42Uh352 County Uintah State Utah

1. Map Reference Southam Canyon Quad, USGS
2. Type of Site Open (ranch or homestead)
3. Cultural Affiliation (if known) historic--post 1900 or late 1800 Anglo
4. Location On bluff above the White River (So. bank) within 50' of very steep bank that drops ca. 75' to water edge.

   Sec. NE¼,NW¼, 14 T. 10S R. 24E
5. Owner and Address unknown
6. Previous Owners unknown
7. Tenant none
8. Informants none
9. Previous Designations for Site none known
10. Site description, position, & surrounding terrain Site consists of a 2-room cabin, one room shed (?) and log roofed dug-out storage cellar. Both of hand hewn logs. Some commercial lumber used for door & window frames.
11. Area of Occupation 100 ft. EW by 50 + ft. NS
12. Depth and Character of Fill May be a trash heap somewhere, but was not observed
13. Present Condition Fair
14. Material Collected none
15. Material Observed tin cans, wash tub, nails, glass sherds (all appear fairly recent)
16. Material Reported and Owner none known
17. Recommendations for Further Work none, unless it is found to be of historic significance.
18. Photo Nos. none
19. Type of map made by survey party none

Recorded by G. Dalley Date 6-6-74



S-4
HE-1
G-10
X-4
Drill Hole
RIVER
G-22
G-11
HS-1
X-5
Drill Hole
Evacuation
G-5
A-11
HE-3
X-11
X-9
G-13
G-14
G-4
G-15
X-8
X-10
HS-2
S-9
P-3
G-7
Creek

Antiquity Section

SITE SURVEY SHEET

Archeological Survey

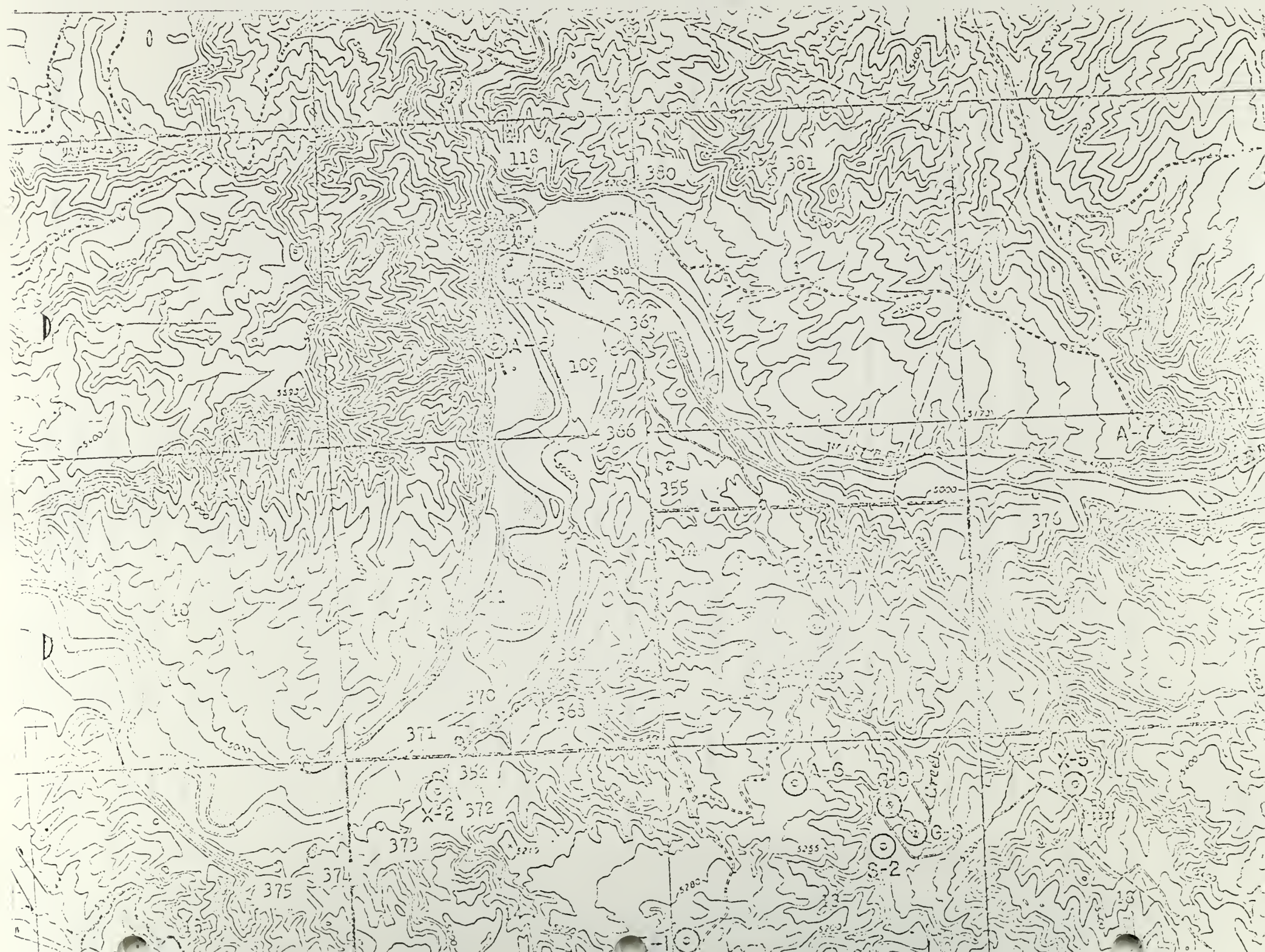
Division of State History

Site No. 42Uh355 County Uintah State Utah

1. Map Reference Southam Canyon Quad, USGS
2. Type of Site Rock Shelter
3. Cultural Affiliation (if known) Archaic
4. Location 200 ft. south of road at .8 mile north of benchmark. First major outcropping of sandstone if driving south.

   Sec. NW¼, NW¼, 12 T. 10S R. 24E
5. Owner and Address BLM
6. Previous Owners ---
7. Tenant none
8. Informants none
9. Previous Designations for Site ---
10. Site description, position, & surrounding terrain Sandstone outcrop. Rock shelter on west side of outcrop. Front of shelter slopes into sagebrush covered depression, slopes up to knoll 100 ft. south of shelter.
11. Area of Occupation indeterminable
12. Depth and Character of Fill sand
13. Present Condition Undisturbed. Chips found entire length of shelter (8'x60')
14. Material Collected flint chips, notched point (Elko side-notched)
15. Material Observed flint , no charcoal or smoke stains
16. Material Reported and Owner ---
17. Recommendations for Further Work none
18. Photo Nos. none
19. Type of map made by survey party none

Recorded by Dixon Hindley Date 7-17-74



118
380
381
367
109
366
355
376
A-7
370
363
371
352
X-2
372
373
374
375
A-6
G-9
G-8
S-2
X-5
Creek
5000
5255
5280

Antiquity Section

SITE SURVEY SHEET

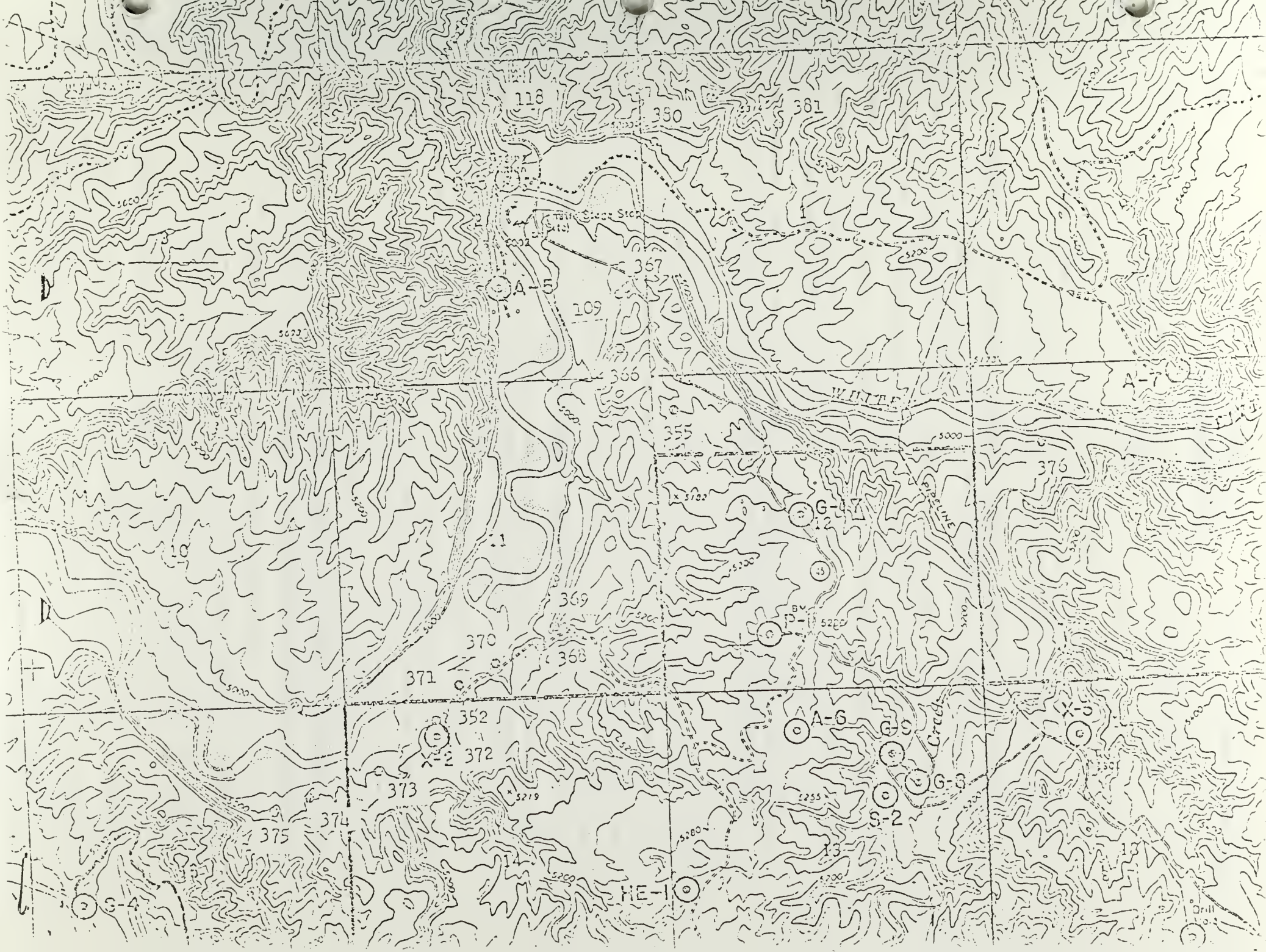
Archeological Survey

Division of State History

Site No. 42Un356 County Uintah State Utah

1. Map Reference Southam Canyon Quad, USGS
2. Type of Site Open
3. Cultural Affiliation (if known) unknown
4. Location ca. 6.5 airline miles SW of Bonanza, Utah where three tributary arroyos intersect the White River. Site lies between the two west of the 3 arroyos, 250 m. N of present river. Sec. NW¼, SW¼, 16 T. 10S R. 24E
5. Owner and Address State of Utah
6. Previous Owners N.A.
7. Tenant none
8. Informants N.A.
9. Previous Designations for Site none
10. Site description, position, & surrounding terrain Site consists of a scattering of chipping debris on an alluvial terrace on the north bank of the White River.
11. Area of Occupation 25 meters in diameter
12. Depth and Character of Fill unknown
13. Present Condition eroded to terrace gravels
14. Material Collected flakes (worked and unworked) and chipping debris. Collection was destroyed in fire of July 27, 1974
15. Material Observed see #10 above
16. Material Reported and Owner ---
17. Recommendations for Further Work test
18. Photo Nos. none
19. Type of map made by survey party none

Recorded by Michael Berry Date 7-26-74



118
380
381
367
A-5
109
366
355
A-7
376
G-4
12
369
370
368
371
352
X-2
372
373
374
375
A-6
G-9
G-8
S-2
X-5
HE-1
G-4
Creek

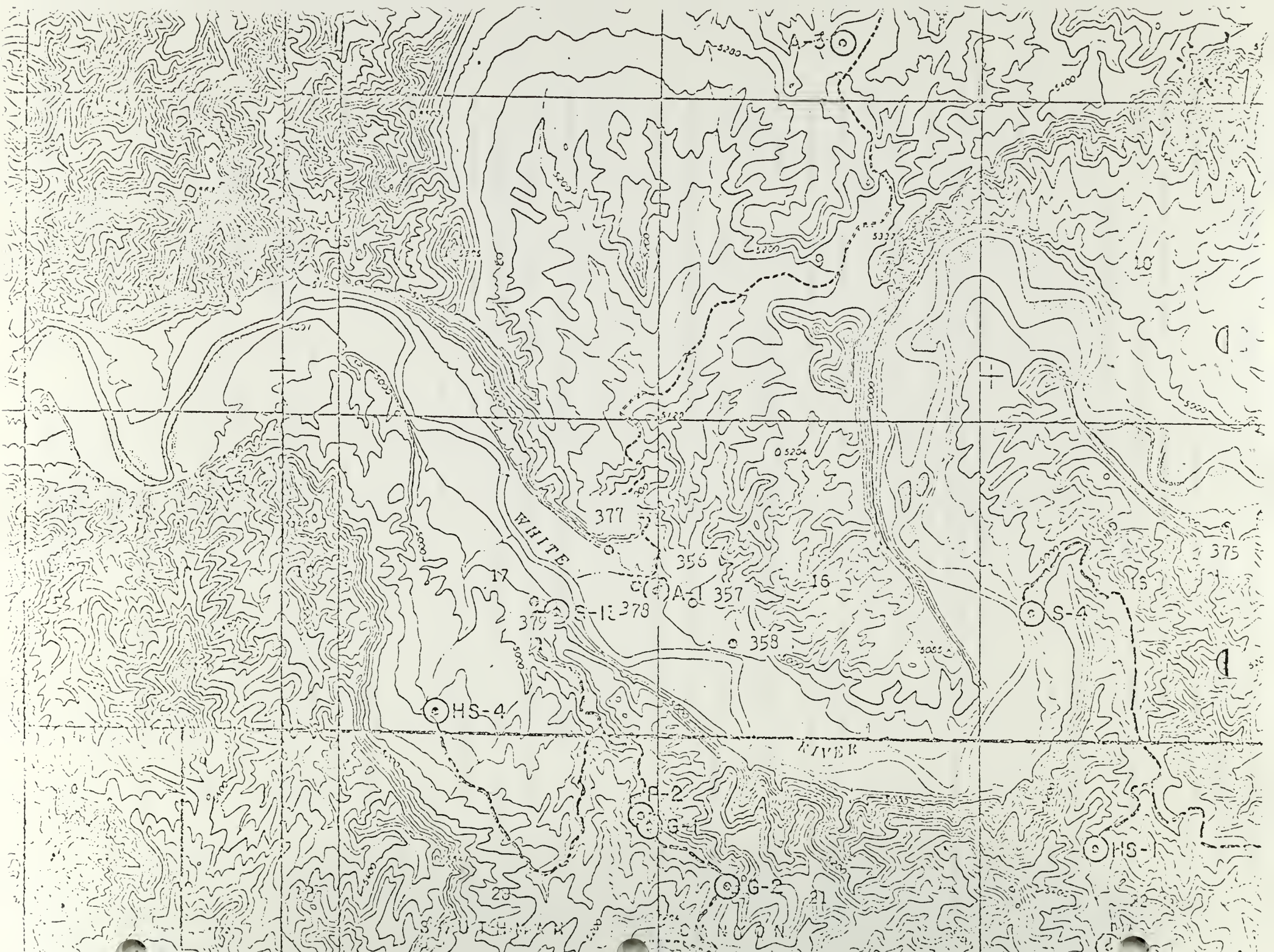
Antiquity Section SITE SURVEY SHEET *Division of State History*

Archeological Survey

Site No. 42Un357 County Uintah State Utah

1. Map Reference Southam Canyon Quad, USGS
2. Type of Site Open
3. Cultural Affiliation (if known) probably Archaic
4. Location Ca. 6.5 miles [illegible] Bonanza, Utah where three tributary arroyos intersect the White River. Midway between two easternmost of arroyos. ca 150 m. N of present river. Sec. NW¼, SW¼, 16 T. 10S R. 24E
5. Owner and Address State of Utah
6. Previous Owners n.a.
7. Tenant none
8. Informants N.A.
9. Previous Designations for Site none
10. Site description, position, & surrounding terrain Site consists of a single Elko side-notched projectile point and a sparse concentration of chipping debris
11. Area of Occupation 5 meters in diameter (chipping debris)
12. Depth and Character of Fill Site lies directly on alluvial gravel terrace, no soil present.
13. Present Condition eroded
14. Material Collected Elko side-notched point and chipping debris. Destroyed in fire of July 27, 1974. One point recovered from burnt camp Oct. 5, 1974
15. Material Observed See #10 Above
16. Material Reported and Owner See #14
17. Recommendations for Further Work test
18. Photo Nos. none
19. Type of map made by survey party none

Recorded by Michael S. Berry Date July 26, 1974



A-3
5200
5400
5337
5204
377
356
A-1
357
16
17
S-13
378
379
358
S-4
375
HS-4
RIVER
P-2
G-1
G-2
HS-1
21
23

Antiquity Section

SITE SURVEY SHEET

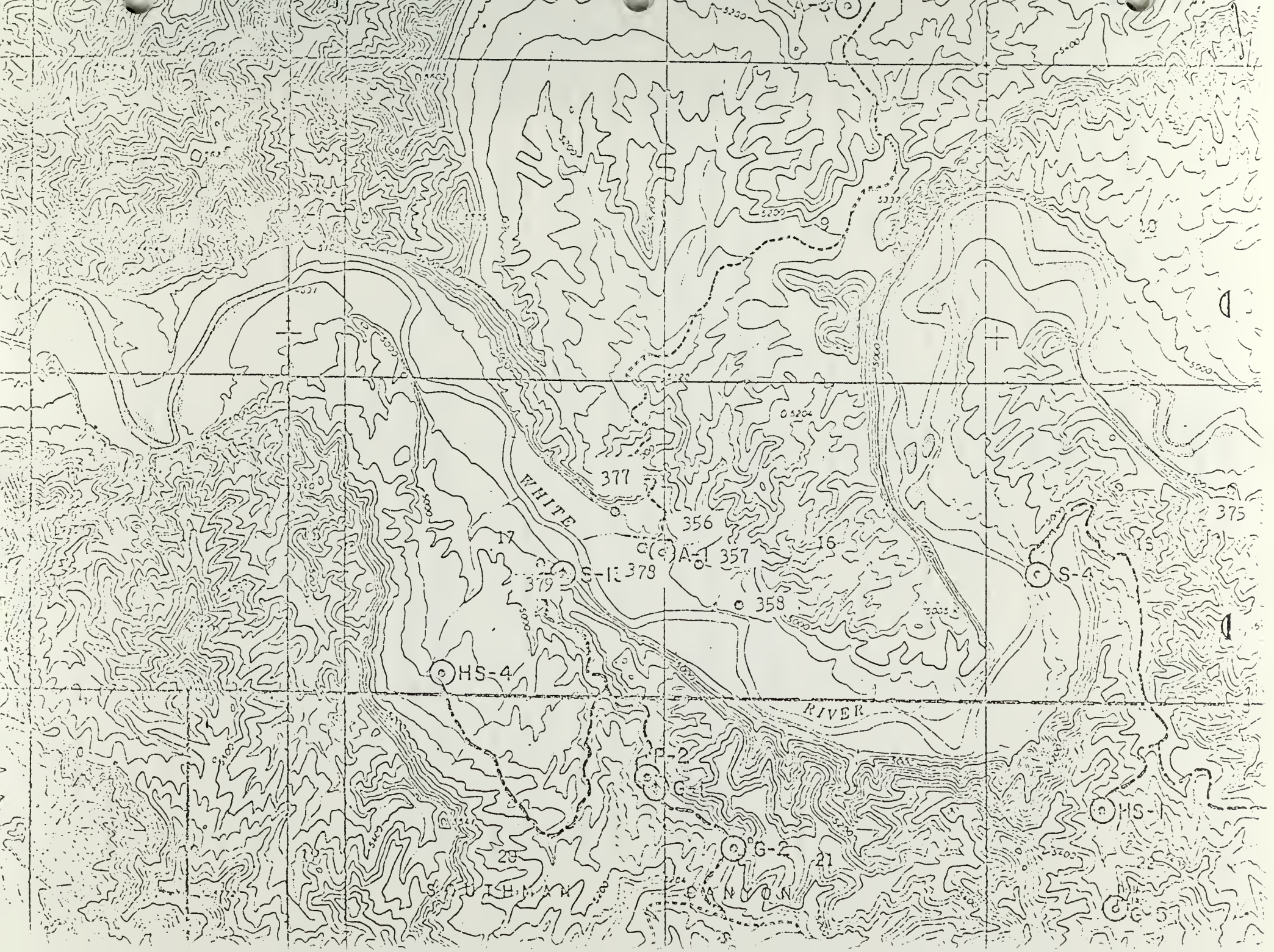
Archeological Survey

Division of State History

Site No. 42Un358 County Uintah State Utah

1. Map Reference Southam Canyon Quad, USGS
2. Type of Site Open
3. Cultural Affiliation (if known) probably Fremont or Numic
4. Location Ca. 6.5 miles SW of Bonanza, Utah where three tributary arroyos intersect the White River. Ca. 50 m. to east of easternmost of three arroyos on terrace (n.bank) center of Sec. SW¼,16 T. 10S R. 24E
5. Owner and Address State of Utah
6. Previous Owners ----
7. Tenant none
8. Informants ---
9. Previous Designations for Site none
10. Site description, position, & surrounding terrain Site consists of a single triangular projectile point lying on the surface of the terrace gravels. There was no other cultural material in the immediate vicinity.
11. Area of Occupation ---
12. Depth and Character of Fill terrace gravels, no soil present
13. Present Condition see #12
14. Material Collected Small triangular projectile point. Destroyed in fire of July 27, 1974. Straight, serrated edges, basal thinning but notches not present
15. Material Observed ---
16. Material Reported and Owner see #14
17. Recommendations for Further Work none
18. Photo Nos. none
19. Type of map made by survey party none

Recorded by Michael F. Berry Date 7/26/74



WHITE
RIVER
377
356
A-1
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S-1
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P-2
G-1
G-2
G-5
SOUTHMAN
CANYON
375
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16
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Antiquity Section

SITE SURVEY SHEET

Archeological Survey

Division of State History

Site No. 42Un305 County Uintah State Utah

1. Map Reference Asphalt Wash Quad, USGS
2. Type of Site Rock Shelter
3. Cultural Affiliation (if known) probably Fremont
4. Location Mouth of Hanging Rock Hollow; ca. 300 m. north of the confluence of the center fork and west fork of Ashphalt Wash.

   Sec. SE¼, SW¼, 6 T. 11S R. 24E
5. Owner and Address unknown
6. Previous Owners ----
7. Tenant none
8. Informants none
9. Previous Designations for Site none
10. Site description, position, & surrounding terrain Large (ca. 100 ft. wide; 25 ft. high and 20 ft. deep) rock shelter containing possible coarsed masonry granary on north side of Hanging Rock Hollow. Burned bone and charcoal present on surface. Granary measures ca. 20 x 8 ft. and has only one or two courses of masonry intact.
11. Area of Occupation ca 100 x 25 ft.
12. Depth and Character of Fill unknown
13. Present Condition The granary walls have been toppled; no apparent looters' pits. Shelter has been utilized in historic times and is littered with machinery parts and rusty tin cans.
14. Material Collected One Desert side-notched projectile point.
15. Material Observed Charcoal, burned animal bones; no pottery observed, no chipping.
16. Material Reported and Owner ---
17. Recommendations for Further Work excavate
18. Photo Nos. none
19. Type of map made by survey party none

Recorded by Michael S. Berry Date 8/10/74

A-3
5200
5400
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5000
5204
377
WHITE
356
A-1
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S-13
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S-4
375
HS-4
RIVER
G-1
G-2
21
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HS-1

Antiquity Section

SITE SURVEY SHEET

Archeological Survey

Division of State History

Site No. 42Un366 County Uintah State Utah

1. Map Reference Southam Canyon Quad, USGS
2. Type of Site Rock Shelter with Pictographs
3. Cultural Affiliation (if known) possibly Archaic and Fremont
4. Location Site ca. ½ mile south at the Wait. River Bridge on the Bonanza to Dragon Road. Located west of road in the first arroyo south of the bridge.

   Sec. SE¼, SW¼, 2 T. 10S R. 24E
5. Owner and Address State of Utah
6. Previous Owners ---
7. Tenant none
8. Informants Bud Thompson, Bonanza
9. Previous Designations for Site none
10. Site description, position, & surrounding terrain Site is a shallow alcove ca. 250 ft. long (EW). Dripline varies from 5 to 15 ft. from rear of alcove. Three pictographs are red ochre anthropomorphs. One of these is a "horned" "Fremont" figure and is adjacent to a "snakelike" red ochre pictograph. Petroglyphs of a horse and mountain sheep are also present, but these may be of "recent" orientation.
11. Area of Occupation Ca. 250 by 10 feet
12. Depth and Character of Fill Looters pits contain charcoal to a depth of at least 18 inches
13. Present Condition The deposits have been badly potted but there is still quite a bit of "virgin" dirt left.
14. Material Collected Flakes and chipping debris
15. Material Observed charcoal, burnt bone, chipping debris. No pottery.
16. Material Reported and Owner Bud Thomson recovered two projectile points -- will try to identify.
17. Recommendations for Further Work excavate
18. Photo Nos. none
19. Type of map made by survey party none

Recorded by Michael Berry Date August 10, 1974

Wash
31
32
365
S-10

Antiquity Section

SITE SURVEY SHEET

Archeological Survey

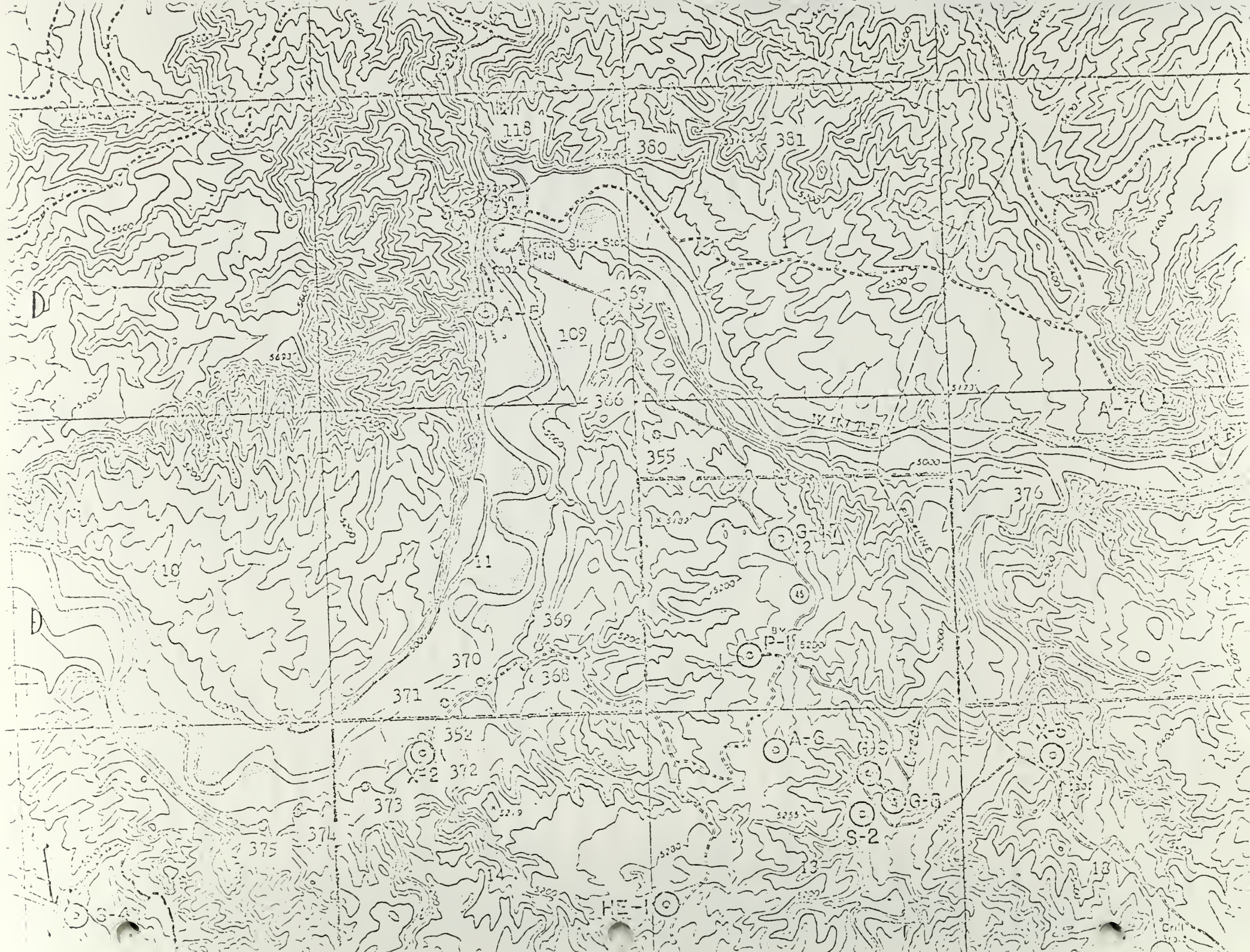
Division of State History

Site No. 42Un367 County Uintah State Utah

1. Map Reference Southam Canyon Quad, USGS
2. Type of Site Rock Shelter
3. Cultural Affiliation (if known) possibly Archaic
4. Location Site is ca. ¼ mile south of White River. 50 yds south of the Bonanza to Dragon Road. 3/4 mile east and south of White River Bridge.

   Sec. SE¼,SE¼, 2 T. 10S R. 24E
5. Owner and Address State of Utah
6. Previous Owners ---
7. Tenant none
8. Informants Bud Thompson, Bonanza, Utah
9. Previous Designations for Site none
10. Site description, position, & surrounding terrain Site is a shallow alcove 100 ft. long (NS). Dripline varies from 5-10 ft. from rear of alcove.
11. Area of Occupation alcove
12. Depth and Character of Fill 2 ft. with charcoal deposits and chipping debris
13. Present Condition Looters' pits have virtually destroyed all fill. One 3 ft. strip of deposit remains undisturbed.
14. Material Collected ---
15. Material Observed flakes and chipping debris. Point tip piece of biface.
16. Material Reported and Owner charcoal, chipping debris, No pottery.
17. Recommendations for Further Work test
18. Photo Nos. none
19. Type of map made by survey party none

Recorded by Christian K. Lund Date August 10, 1974



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Antiquity Section

SITE SURVEY SHEET
Archeological Survey

Division of State History

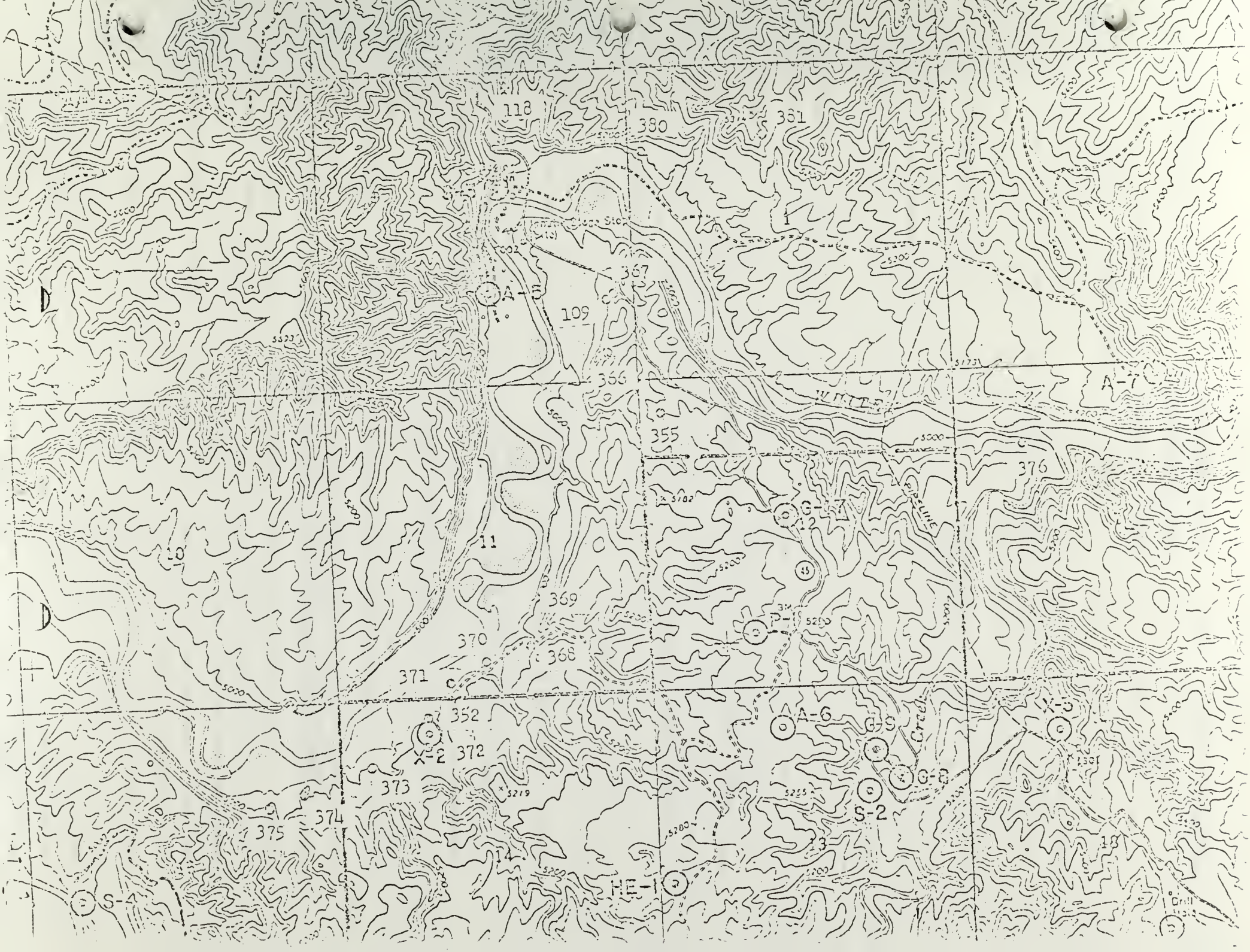
Site No. 42Un368 County Uintah State Utah

1. Map Reference Southam Canyon Quad, USGS
2. Type of Site Open; (riverline)
3. Cultural Affiliation (if known) Possibly Archaic
4. Location Site located 100 yds east of the White River. Directly south of river access road. Ca. 1½ miles from Bonanza to Dragon road.

Sec. SW¼,SE¼, 11 T. 10S R. 24E

5. Owner and Address BLM
6. Previous Owners ----
7. Tenant none
8. Informants none
9. Previous Designations for Site none
10. Site description, position, & surrounding terrain Site is 200 ft. long and 100 ft. wide bounded by a sheer cliff on the west, a deep arroyo on the north, a shallow wash on the south and a jeep trail on the east. Site is on a pleistocene river terrace with most fill eroded. It is sparsely covered with sage brush.
11. Area of Occupation 200 ft. (EW) by 100 ft. (n-s)
12. Depth and Character of Fill varies from a few inches to 1½ ft.
13. Present Condition undisturbed
14. Material Collected One blade point, chipping debris. No pottery
15. Material Observed rusted cans, rifle shells, chipping debris
16. Material Reported and Owner ----
17. Recommendations for Further Work none
18. Photo Nos. none
19. Type of map made by survey party none

Recorded by Christian K. Nunn Date August 11, 1974



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A-6
G-9
G-8
S-2
X-5
HE-1
S-4
Creek
PIPELINE

Antiquity Section

SITE SURVEY SHEET

Archeological Survey

Division of State History

Site No. 42Uh369 County Uintah State Utah

1. Map Reference Southam Canyon Quad, USGS
2. Type of Site Open
3. Cultural Affiliation (if known) Possibly Archaic
4. Location Ca. 1.5 miles due south of the Ignacio Stage stop on the east bank of the White River.

   Sec. NW¼, SE¼, 11 T. 10S R. 24E
5. Owner and Address BLM
6. Previous Owners ---
7. Tenant none
8. Informants none
9. Previous Designations for Site none
10. Site description, position, & surrounding terrain Site consists of an extensive concentration of lithic debris, finished artifacts and fire-cracked river cobbles on a pleistocene terrace on the east bank of the White River. One fire hearth is eroding out and ash is present on the surface in association with fire-cracked cobbles.
11. Area of Occupation Ca. 300 ft. (N-S) by 200 ft. (E-W)
12. Depth and Character of Fill May have considerable depth since terrace has not eroded down to cobbles over most of the area.
13. Present Condition Site has been picked over but no looter's pits present.
14. Material Collected Biface fragments, worked and unworked chips, chipping debris.
15. Material Observed see #14
16. Material Reported and Owner ---
17. Recommendations for Further Work excavate
18. Photo Nos. none
19. Type of map made by survey party none

Recorded by Michael S. Berry Date August 11, 1974

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X-2
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HE-1
S-4
A-6
G-5
G-8
S-2
13
X-3
Drill Hole

Antiquity Section

SITE SURVEY SHEET

Archeological Survey

Division of State History

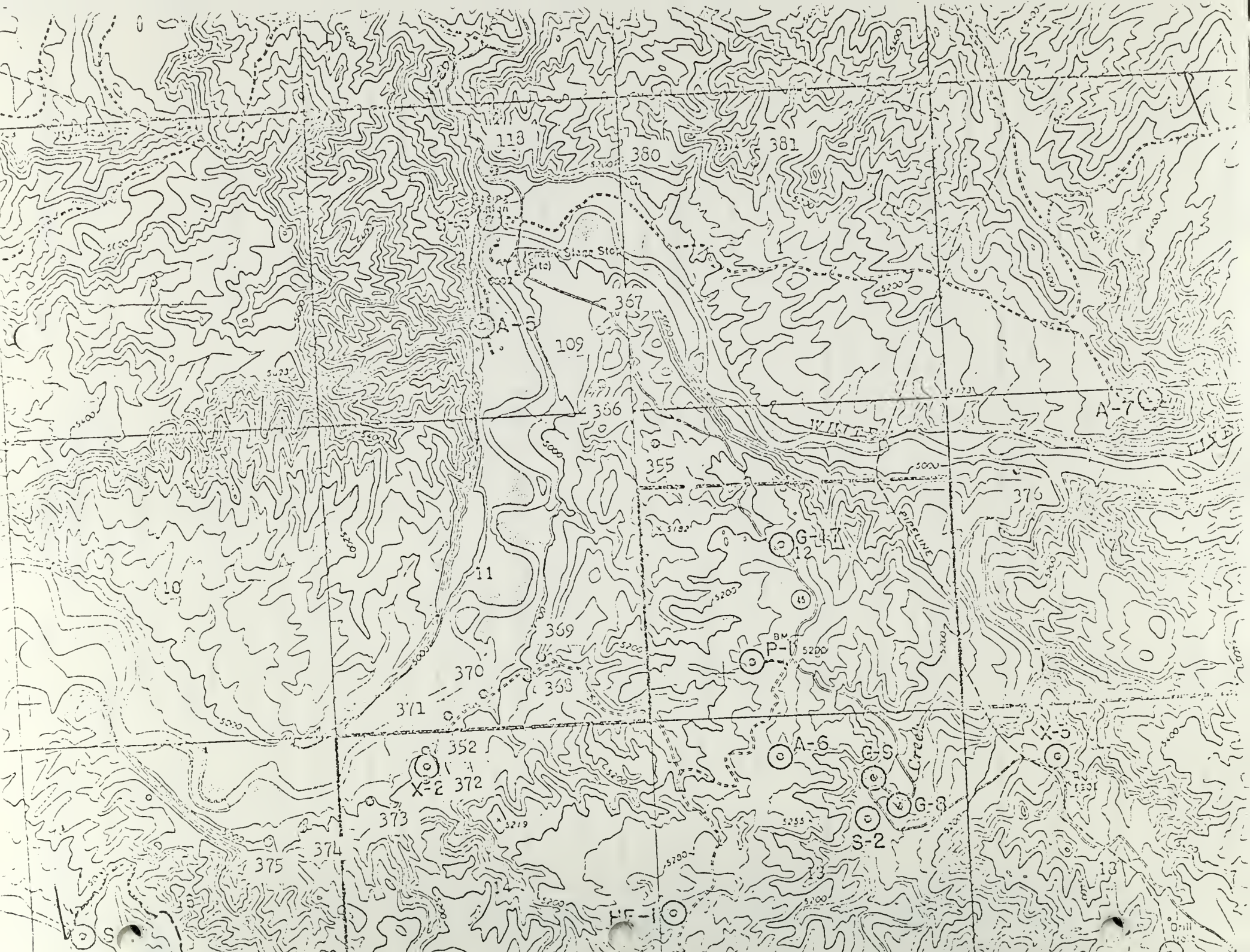
Site No. 42Uo370 County Uintah State Utah

1. Map Reference Southam Canyon Quad, USGS
2. Type of Site Open
3. Cultural Affiliation (if known) possibly Archaic
4. Location Site located ca. ½ mile directly south of White River bridge on the east bank of White River.

Sec. SE¼, SW¼, 11 T. 10S R. 24E

5. Owner and Address BLM
6. Previous Owners ---
7. Tenant none
8. Informants none
9. Previous Designations for Site none
10. Site description, position, & surrounding terrain Site is on pleistocene terrace 40 ft. above present banks of the White River. The site is 300 ft. (E-W) 100 ft. (N-S); a relatively level mound. Sage and greasewood scattered over surface.
11. Area of Occupation 300 ft. x 100 ft.
12. Depth and Character of Fill graded to gravels. Considerable deposits of possible depth.
13. Present Condition undisturbed
14. Material Collected ---
15. Material Observed chipping debris, one biface fragment, one arrowhead, numerous fire-blackened river cobbles, No pottery.
16. Material Reported and Owner ---
17. Recommendations for Further Work excavate
18. Photo Nos. none
19. Type of map made by survey party none

Recorded by Christian R. Lund Date August 20, 1974



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X-2
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A-6
G-9
G-8
S-2
X-5
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Antiquity Section **SITE SURVEY SHEET** *Division of State History*

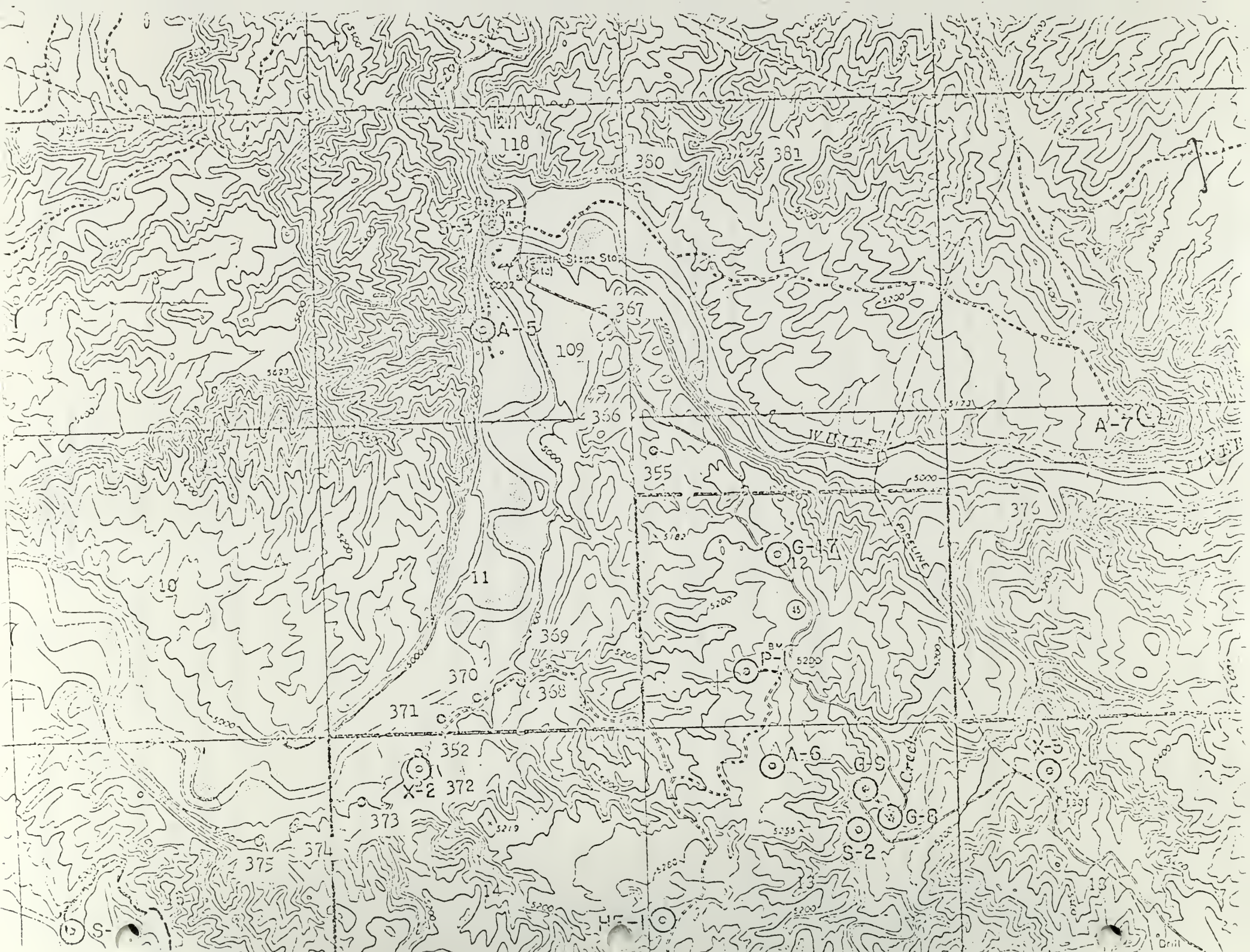
Archeological Survey

Site No. 42Un371 County Uintah State Utah

1. Map Reference Southam Canyon Quad, USGS
2. Type of Site Open
3. Cultural Affiliation (if known) possibly Fremont
4. Location Site located 1½ miles south of White River bridge on east bank of the White River.

   Sec. SE¼, SW¼, 11 T. 10S R. 24E
5. Owner and Address BLM
6. Previous Owners ----
7. Tenant none
8. Informants none
9. Previous Designations for Site none
10. Site description, position, & surrounding terrain Site is a pleisocene terrace 100 ft. east of White River. Lourdered on the north by a narrow wash, on the west by a 50 ft. cliff and on the south and east by a continuation of terrace. The site is sparsely covered by sage brush and greasewood.
11. Area of Occupation 100 ft. (E-W), 50 ft. (N-S).
12. Depth and Character of Fill 1 ft. to unknown depth
13. Present Condition undisturbed
14. Material Collected One etched slate 6"x6" pictograph of four legged creature and anthropomorph; and designs.
15. Material Observed five blackened river cobbles. No pottery. No lithics.
16. Material Reported and Owner ---
17. Recommendations for Further Work test
18. Photo Nos. none
19. Type of map made by survey party none

Recorded by Carlarion K. Lund Date August 21, 1974



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WHITE
PIPELINE
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352
X-2
372
373
374
375
P-1
A-6
G-9
G-8
S-2
X-5
HE-1

Antiquity Section | SITE SURVEY SHEET | *Division of State History*

Archeological Survey

Site No. 42Un372 County Uintah State Utah

1. Map Reference Southam Canyon Quad, USGS
2. Type of Site Open
3. Cultural Affiliation (if known) Possibly Archaic
4. Location On knoll on south bank of White River.

NW¼,NW¼, Sec. 14 T. 10S R. 24E

5. Owner and Address BLM
6. Previous Owners ---
7. Tenant none
8. Informants none
9. Previous Designations for Site none
10. Site description, position, & surrounding terrain Site lies on knoll overlooking White River; arroyos on either side. Covered with low sage, slat brush and sarcobatus. Five cottonwood trees found immediately below knoll along river.
11. Area of Occupation scattered chipping over entire surface of knoll, Ca. 100 meter diameter
12. Depth and Character of Fill apparently none
13. Present Condition undisturbed
14. Material Collected chipping debris
15. Material Observed See #11 above
16. Material Reported and Owner see #11
17. Recommendations for Further Work none
18. Photo Nos. none
19. Type of map made by survey party none

Recorded by David B. Madsen Date 8/21/74

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G-17
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X-2
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A-6
G-9
G-8
S-2
X-3
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HE-1
S-4

Antiquity Section SITE SURVEY SHEET *Division of State History*

Archeological Survey

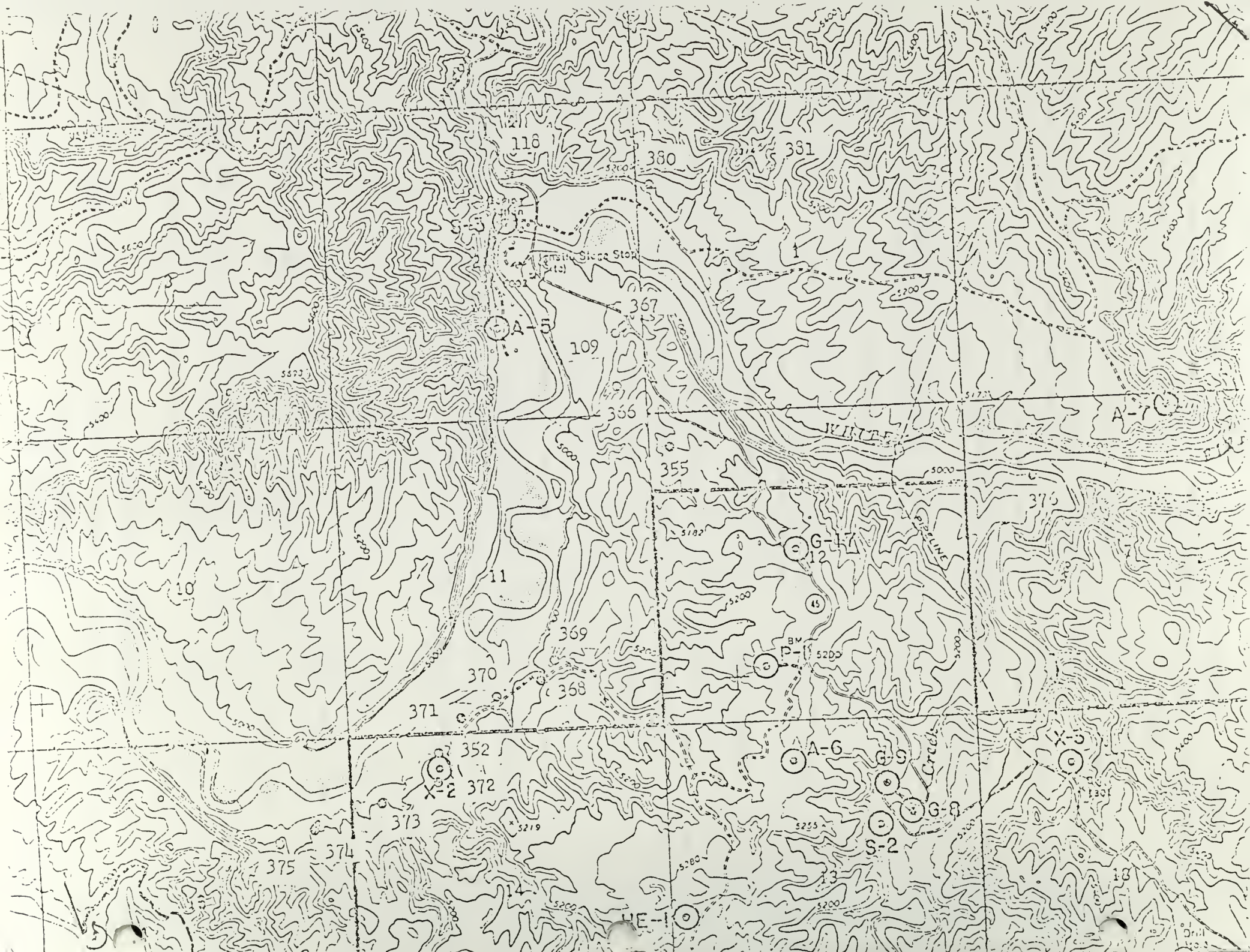
Site No. 42Un373 County Uintah State Utah

1. Map Reference Southam Canyon Quad, USGS
2. Type of Site Open
3. Cultural Affiliation (if known) possibly Archaic
4. Location On knoll overlooking south bank of White River.

NE¼, NW¼ Sec. 14 T. 10S R. 24E

5. Owner and Address BLM
6. Previous Owners ---
7. Tenant none
8. Informants none
9. Previous Designations for Site none
10. Site description, position, & surrounding terrain See 42Un372. Site 42Un373 is ca. 200 meters west of 372 and terrain is identical.
11. Area of Occupation 100 by 100 ft.
12. Depth and Character of Fill possibility of considerable depth
13. Present Condition no evidence of looters pit. Surface has probably been picked over.
14. Material Collected chipped stone
15. Material Observed chipped stone and dfire-cracked river cobbles
16. Material Reported and Owner N.A.
17. Recommendations for Further Work test
18. Photo Nos. none
19. Type of map made by survey party none

Recorded by Michael S. Berry Date 3/21/74



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WHITE
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PIPELINE
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P-1
5200
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X-2
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374
375
A-6
G-9
G-8
S-2
X-5
Creek
HE-1
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18
5000
5200
5182
5219
5255
5280

Antiquity Section

SITE SURVEY SHEET

Archeological Survey

Division of State History

Site No. 42Uh375 County Uintah State Utah

1. Map Reference Southam Canyon Quad, USGS
2. Type of Site Open
3. Cultural Affiliation (if known) possibly Archaic
4. Location On a knoll overlooking a cottonwood covered flat on the south bank of the White River. Knoll lies between two dry arroyos.

approx. center, NE¼ Sec. 15 T. 10S R. 24E

5. Owner and Address BLM
6. Previous Owners N.A.
7. Tenant none
8. Informants N.A.
9. Previous Designations for Site none
10. Site description, position, & surrounding terrain Site consists of a heavy concentration of fire-cracked river cobbles and chipping detritus
11. Area of Occupation Ca. 100 x 150 ft.
12. Depth and Character of Fill possibly quite deep. Artifacts eroding out of knoll.
13. Present Condition no obvious looter pits
14. Material Collected chipped stone and one large sandstone projectile point tip (non-diagnostic)
15. Material Observed river cobbles - fire cracked
16. Material Reported and Owner N.A.
17. Recommendations for Further Work test
18. Photo Nos. none
19. Type of map made by survey party none

Recorded by Michael Berry Date 8/21/74

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X-2
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A-6
G-9
G-8
S-2
X-5
HE-1
S-4

Antiquities Section

SITE SURVEY SHEET

Archeological Survey

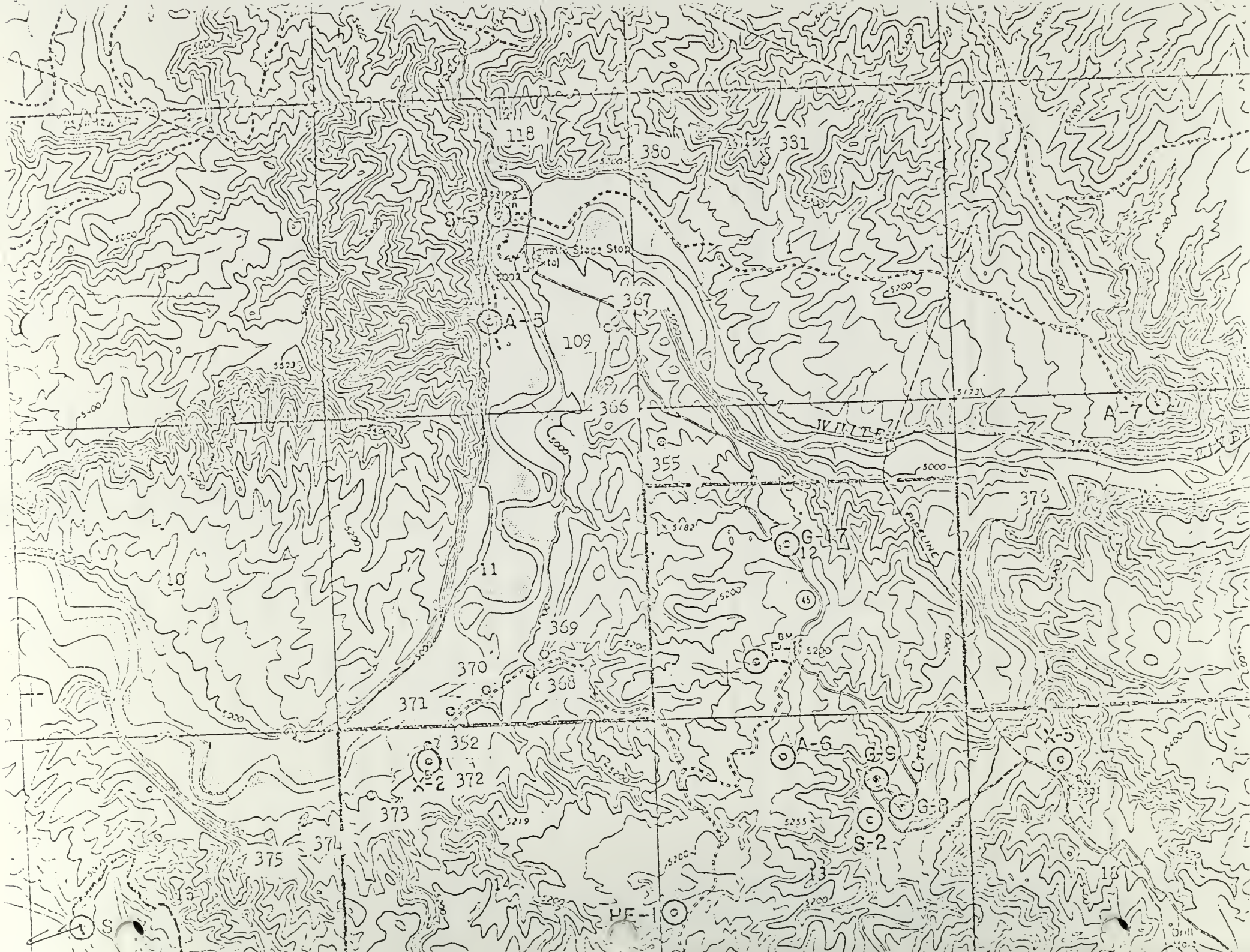
Site No. 42Un376 County Uintah State Utah

1. Map Reference Southam Canyon Quad, USGS
2. Type of Site Open
3. Cultural Affiliation (if known) possibly Archaic - Fremont
4. Location On the south bank of the White River ca. 200 m. west of the confluence of White River and Evacuation Creek.

   NW¼, NW¼ Sec. 7 T. 10S R. 25E

5. Owner and Address BLM
6. Previous Owners ---
7. Tenant none
8. Informants none
9. Previous Designations for Site none
10. Site description, position, & surrounding terrain Chipping debris and projectile points on a gradually sloping talus slope overlooking the White River. Minor concentrations of fire-cracked cobbles.
11. Area of Occupation Ca. 20' x 20'
12. Depth and Character of Fill talus, probably no depth
13. Present Condition
14. Material Collected One Elko eared projectile point. One desert side-notched projectile points Chipping debris. No pottery
15. Material Observed same as #10 and #14, also fire cracked cobbles
16. Material Reported and Owner N.A.
17. Recommendations for Further Work
18. Photo Nos. none
19. Type of map made by survey party none

Recorded by Michael Berry Date 8/23/74



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373
374
375
A-6
G-9
G-8
S-2
X-5
HE-1

Antiquity Section

SITE SURVEY SHEET

Archeological Survey

Division of State History

Site No. 42Uh377 County Uintah State Utah

1. Map Reference Southam Canyon quad, USGS

2. Type of Site Open

3. Cultural Affiliation (if known) Possibly Archaic

4. Location Site located ca. 5 miles by jeep trail from White River on the north bank of the White River. Directly north of a log structure in "Wets" canyon.

SW¼, NE¼ Sec. 17 T. 10S R. 24E

5. Owner and Address BLM

6. Previous Owners N.A.

7. Tenant none

8. Informants Bud Thompson of Bonanza

9. Previous Designations for Site none

10. Site description, position, & surrounding terrain Site located on pleistocene terrace 500 yds north of present course of White River. Terrace rises gradually from flood plain on the south. North of site terrace rises sharply for 50' and then verticle sandstone wall stands 200' above terrace. Site is 75' (EW) 50' (N-S). Two large sandstone rocks bound the site on the north and south. Surface is covered with talus.

11. Area of Occupation 75' (E-W) x 50' (N-S)

12. Depth and Character of Fill considerable depth with charcoal, debris and fire-blackened rock.

13. Present Condition Looted by informant Bud Thompson who claims to have extracted 35 arrowheads. Site is excavatable in one or two places.

14. Material Collected chipping debris, point tip. No pottery.

15. Material Observed charcoal deposits, fire-blackened cobbles, debris

16. Material Reported and Owner N.A.

17. Recommendations for Further Work Excavate

18. Photo Nos. none

19. Type of map made by survey party excavate

Recorded by Christian K. Lund Date 8/24/74

A-3
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WHITE
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A-1
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S-1
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S-4
375
HS-4
RIVER
P-2
G-1
G-2
HS-1
20
21
SOUTHMAN
CANYON

Antiquity Section

SITE SURVEY SHEET

Archeological Survey

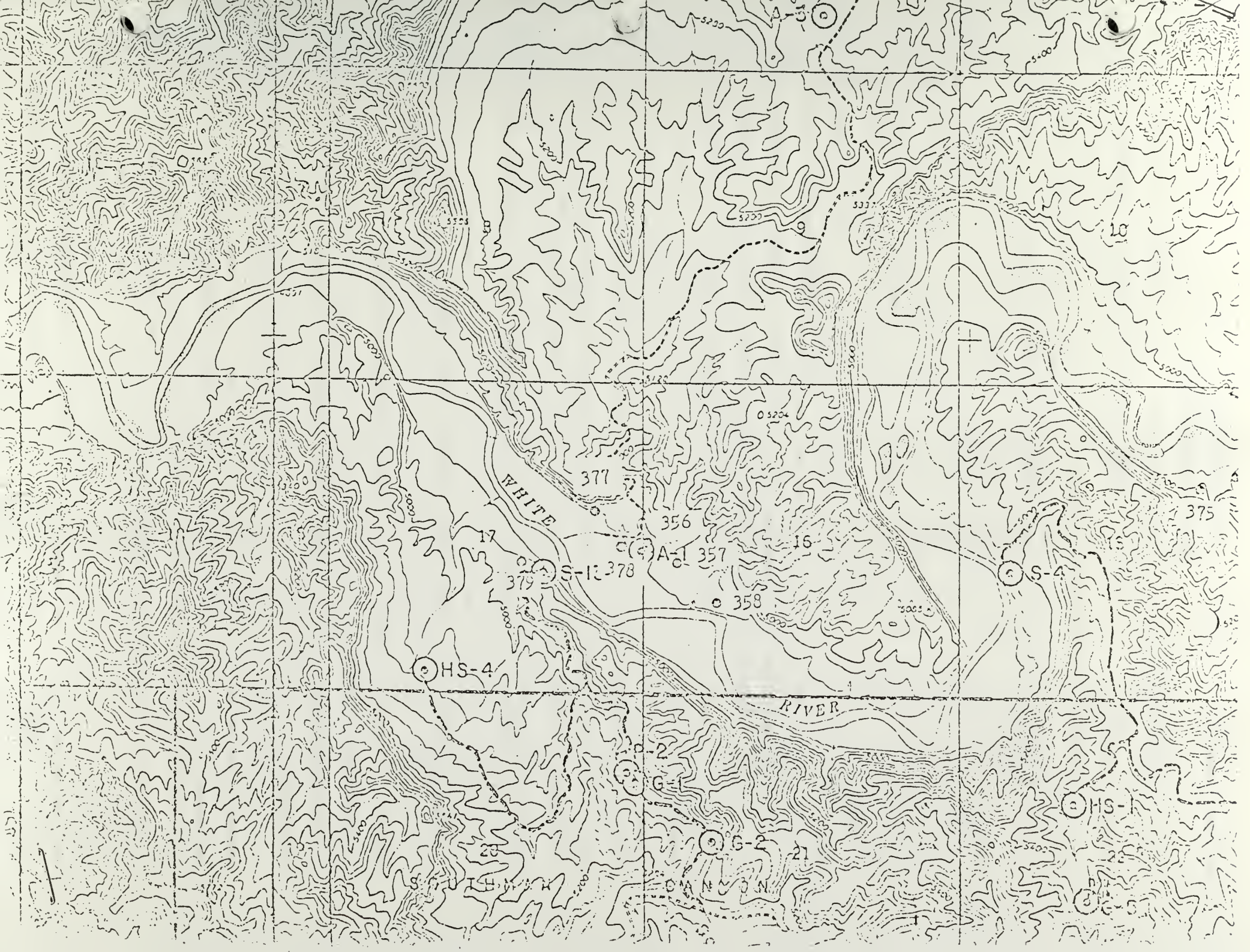
Division of State History

Site No. 42Uo378 County Uintah State Utah

1. Map Reference Southam Canyon Quad, USGS
2. Type of Site Open
3. Cultural Affiliation (if known) Possibly Archaic
4. Location On the north bank of the White River on a terrace remnant adjacent to the south side of wash road from Wagon Hound Canyon.

   NW¼, SE¼, Sec. 17 T. 10S R. 24E
5. Owner and Address BLM
6. Previous Owners none
7. Tenant none
8. Informants none
9. Previous Designations for Site none
10. Site description, position, & surrounding terrain Scattering of lithic debris and artifacts on terrace remnant. Vegetation predominated by greasewood.
11. Area of Occupation Ca. 200 x 200 feet.
12. Depth and Character of Fill gravels, probably not much depth.
13. Present Condition Probably been picked over a great deal, but no pot holes
14. Material Collected One small, stemmed projectile point, one crude biface, chipping debris.
15. Material Observed See #10 and 14. Also fire-reddened river cobbles
16. Material Reported and Owner N.A.
17. Recommendations for Further Work test
18. Photo Nos. none
19. Type of map made by survey party N.A.

Recorded by Michael Berry Date 8/24/74



WHITE
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S-1
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S-4
HS-4
G-1
G-2
HS-1
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17
21

Antiquity Section

SITE SURVEY SHEET

Archeological Survey

Division of State History

Site No. 42Uh379 County Uintah State Utah

1. Map Reference Southam Canyon Quad, USGS

2. Type of Site Open

3. Cultural Affiliation (if known) unknown

4. Location On a knoll overlooking the south bank of the White River at a confluence of a major arroyo, leading in Southam Canyon and the White River. NW¼, SE¼, Sec. 7 T. 10S R. 24E

5. Owner and Address BLM

6. Previous Owners none

7. Tenant none

8. Informants none

9. Previous Designations for Site none

10. Site description, position, & surrounding terrain Terrace remnant overlooking the White River. Soarse scattering of chipping debris and core fragments. One vaguely rectangular stone outline may be a tipi ring.

11. Area of Occupation Ca. 200 x 200 ft.

12. Depth and Character of Fill Soil eroded down to terrace gravels--no depth

13. Present Condition Probably picked over quite extensively. Lots of litter from a cowboy or hunting camp.

14. Material Collected core fragments, chipping debris

15. Material Observed See # 10 and #14

16. Material Reported and Owner N.A.

17. Recommendations for Further Work

18. Photo Nos. none

19. Type of map made by survey party N.A.

Recorded by Michael Berry Date 8/25/74

WHITE
RIVER
HS-4
S-4
377
356
357
358
378
5000

Antiquity Section SITE SURVEY SHEET *Division of State History*

Archeological Survey

Site No. 42Uh320 County Uintah State Utah

1. Map Reference Southam Canyon [illegible], USGS
2. Type of Site Open
3. Cultural Affiliation (if known) possibly Archaic
4. Location North bank of the White River, ca 1/4 mile east of the White River Bridge

   NW¼, NW¼, Sec. 1 T. 10S R. 24E
5. Owner and Address BLM
6. Previous Owners none
7. Tenant none
8. Informants none
9. Previous Designations for Site none
10. Site description, position, & surrounding terrain One projectile point fragment on a pleistocene gravel terrace on the north bank of the White River.
11. Area of Occupation N.A.
12. Depth and Character of Fill Probably none -- soil eroded down to gravels.
13. Present Condition
14. Material Collected One large triangular, side-notched point fragment
15. Material Observed See #10 and #14 above
16. Material Reported and Owner N.A.
17. Recommendations for Further Work
18. Photo Nos. none
19. Type of map made by survey party N.A.

Recorded by Michael Berry Date 8/26/74

118
380
381
367
A-5
109
366
355
A-7
G-17
12
11
10
369
370
368
371
352
X-2
372
373
374
375
A-6
G-9
G-8
S-2
HE-1
S-4

MOORE BUSINESS FORMS INC

Department of Anthropology

SITE SURVEY SHEET

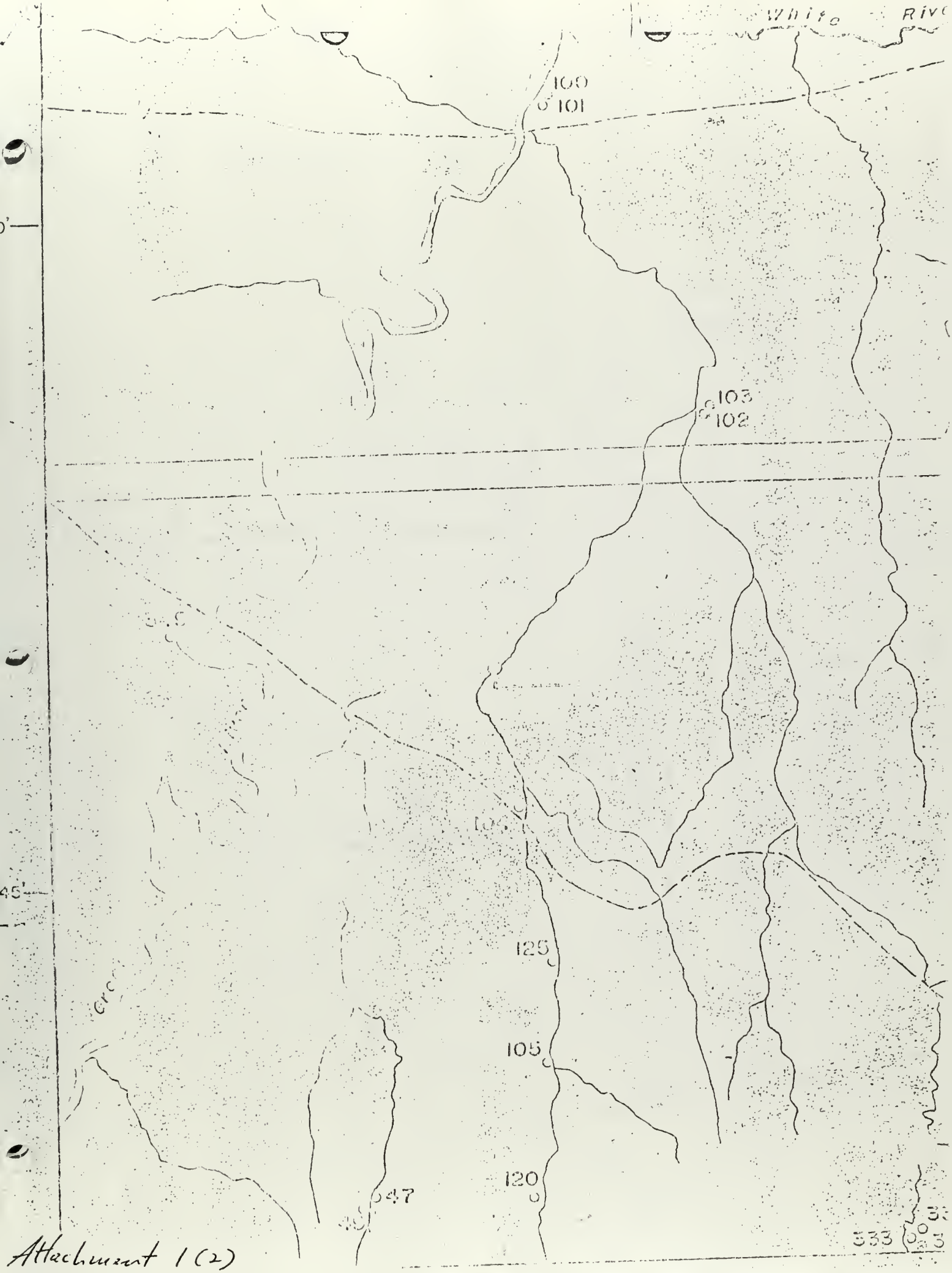
Archeological Survey

University of Utah

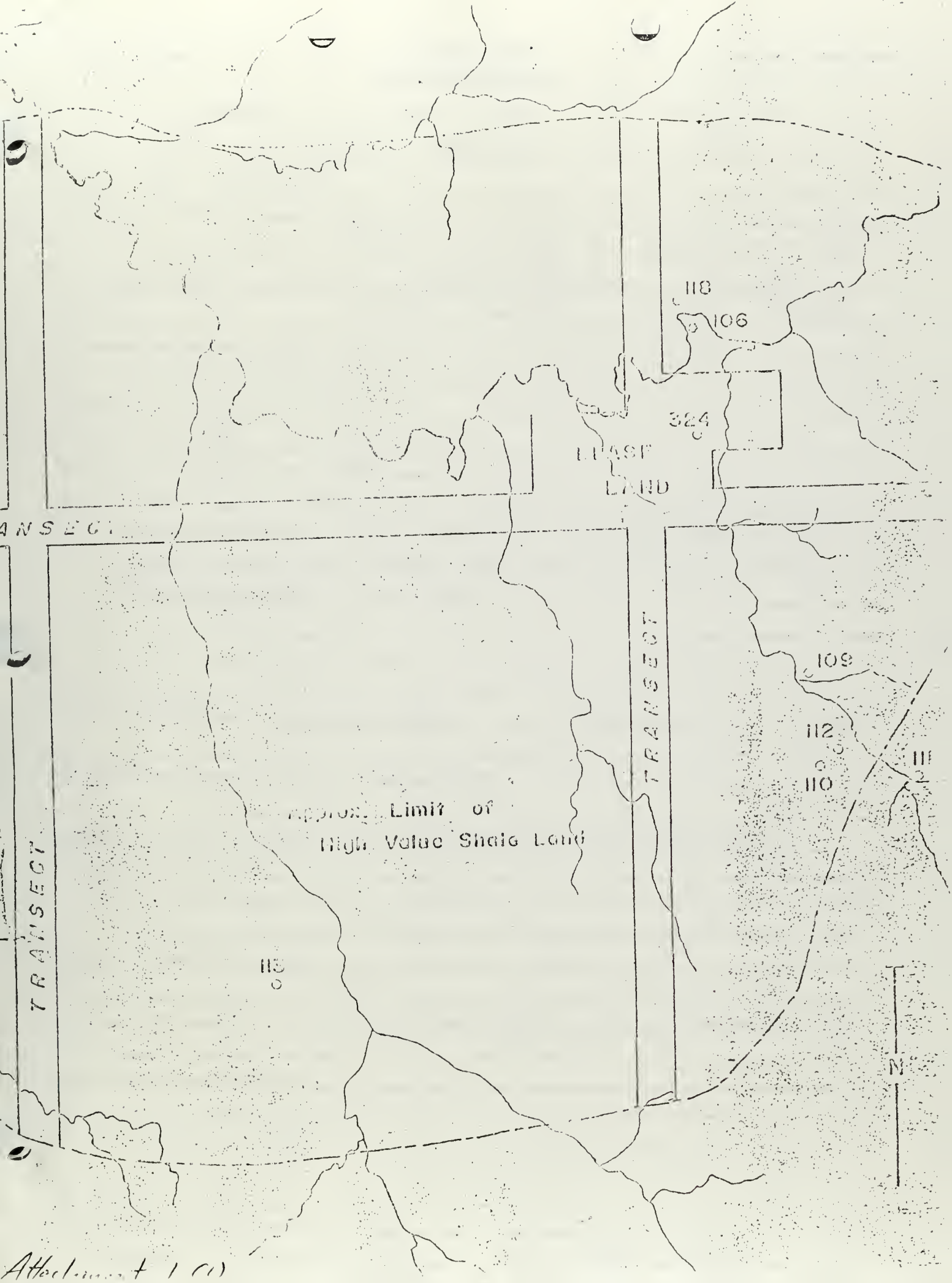
Site No. [illegible] County Uinta State Utah

1. Map Reference Southam Canyon Quad 1/24000
2. Type of Site Ranch or Homestead
3. Cultural Affiliation (if known) Historic - post 1900 or late 1800 [illegible]
4. Location On bluff above the White River (S. Bank) [illegible] 50' of very steep bank that drops ca 75' to [illegible] edge NE1/4, NW1/4 Sec. 14 T. 10 S R. 24 E
5. Owner and Address Unknown
6. Previous Owners Unknown
7. Tenant None
8. Informants None
9. Previous Designations for Site None Known
10. Site description, position, & surrounding terrain Site consists of a 2-roo[illegible] cabin, a one room shed(?) and a log-roofed dugout [illegible] cellar. All are of hand hewn [illegible] with some commercial lumber used fo[illegible] [illegible] & window frames. Vegetation on bluff is [illegible] and [illegible] - River bottom is [illegible], [illegible] etc, but is limited in [illegible]
11. Area of Occupation 100 ft E-W by 50+ ft N-S
12. Depth and Character of Fill May be a trash heap somewhere but was not observed
13. Present Condition Only fair - roofs are off cabin & shed [illegible] of cabin room has collapsed - most ad[illegible] [illegible] in some form between the logs in the [illegible] cellar probably in best shape
14. Material Collected None
15. Material Observed Tin cans, wash tub, mud-headed nails, gl[illegible] [illegible] - all appear fairly recent
16. Material Reported and Owner None Known
17. Recommendations for Further Work None unless found to be of [illegible] importance - appears to be slightly [illegible] of [illegible] [illegible] than 0.1 mile

10
11
Un 352
15
14
Drill Hole
Un 324
Drill Hole
21
20



Attachment 1 (2)



Attachment 1 (1)

Antiquity Section **SITE SURVEY SHEET** *Division of State History*

Archeological Survey

Site No. 42Uo381 County Uintah State Utah

1. Map Reference Southam Canyon Quad, USGS
2. Type of Site Rock Shelter
3. Cultural Affiliation (if known) unknown
4. Location Ca. 1/3 mile (NE) from the White River. Ca. one mile from the White River Bridge along deep trail through White River city up second wash.
   NE¼, NW¼ Sec. 1 T. 10S R. 24E
5. Owner and Address BLM
6. Previous Owners N.A.
7. Tenant none
8. Informants none
9. Previous Designations for Site none
10. Site description, position, & surrounding terrain Site is positioned in the SW part of a semicircular sandstone outcrop. Areasbelow shelter falls away sharply and is littered with rock spall. Shelter is 30' (N-S) 8' (E-W) from dripline to deepest part of ceiling--smoke stained.
11. Area of Occupation 30' (N-S) 8' (E-W)
12. Depth and Character of Fill at least one foot
13. Present Condition Looted; a meter square pit is dug beneath smoke stain.
14. Material Collected none
15. Material Observed fire-blackened river cobbles, charcoal in looters' back dirt
16. Material Reported and Owner N.A.
17. Recommendations for Further Work
18. Photo Nos. none
19. Type of map made by survey party N.A.

Recorded by Christian K. Lund Date 3/26/74

118
380
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367
A-5
109
366
355
A-7
376
G-17
12
11
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369
370
368
371
352
X-2
372
373
374
375
A-6
G-9
G-8
S-2
13
HE-1

RECEIVED OCT - 2 1974

STATE OF UTAH
Calvin L. Rampton, Governor
DEPARTMENT OF
DEVELOPMENT SERVICES
Division of State History
Melvin T. Smith, Director
603 East South Temple
Salt Lake City, Utah 84102
Telephone: (801) 328-5755

September 27, 1974

Mr. Andy Jackson
VTN Engineers, Architects, Planners
6875 East Evans Avenue
Denver, Colorado 80222

Dear Andy,

This is to provide you with clearance on the core hole location you asked us to inspect for cultural resources. With the exception of station #2 all eleven drill holes are clear of any archeological or historical sites. Station #2 is in the midst of a relatively large scattering of surface lithic debris. There is some indication of midden in this site and it should be avoided. We encountered some difficulty in surveying these locations since several appeared to have been disturbed prior to our arrival. Specifically, a bulldozer had disturbed location #8 and was sitting on top of the site when we inspected it. In addition, the access routes to sites 6 and 7 were already in place. As a result it could not be determined whether or not there were any cultural resources in these locations.

Enclosed is a copy of the map in the area of location #2. As you will note there are a number of sites in this vicinity. A survey has been completed along this area of the White River and if you wish to relocate this core hole you can do so by placing it in an area away from any of the identified archeological sites.

If I can be of further help to you, please let me know.

Sincerely,

David B. Madsen

DAVID B. MADSEN
State Archeologist

DBM :lg

Enclosure

STATE HISTORY BOARD: Dr. Milton C. Abrams, Chairman • Theron H. Luke • Juanita Brooks • Cleo L. Jensen • Howard C. Price, Jr.
Dr. Dello G. Dayton • Dr. Richard O. Ulibarri • Helen Z. Papanikolas • Clyde L. Miller • Elizabeth Skanchy • Naomi Woolley

Gaging Station
Ignatio Stage Stop (Site)
WHITE
Creek
P-1
45
5600
5400
5000
5200
5182
5219
5255
5280
5173
5693
5337
5085
5314

PALEONTOLOGY

1517-21

PALEONTOLOGICAL SURVEY PROCEDURES

SUBMITTED TO

VTN CONSOLIDATED INC.

By

Wade E. Miller
Associate Professor of Zoology and Geology

Brigham Young University
Provo, Utah

November 19, 1974

PALEONTOLOGICAL SURVEY PROCEDURES

General Statement

The paleontological survey can be divided into four steps or phases which may in part be conducted simultaneously. How many of these phases that are carried on at one time is dependent upon the magnitude of the survey and number of people participating in it. The four phases are: Literature Search and Map Study, Field Survey, Identification of Specimens and Report Writing.

Persons assisting me in paleontological surveys are selected graduate (and in some instances undergraduate) students majoring in paleontology. They must have had field course work as well as academic studies in paleontology and shown a proficiency therein. The number of students selected to assist is dependent upon the area to be surveyed and time limits involved.

On occasion it may be necessary to confer with a specialist in a particular area of paleontology in order to determine the scientific value of unique fossils. My professional contacts are such that I can gain the necessary information in any area of specialization within the field of paleontology.

Phase I. Literature Search and Map Study

It is necessary to conduct at least a preliminary literature search before commencing field work. Information thus gained will alert the field party to some of the previous fossil finds that have been made in the survey area, if any, and the general types of fossils to be encountered. Also, knowledge of the method of preservation, condition of fossils, abundance, areas of concentration, etc. that have been reported in the literature can greatly facilitate any field survey. Data gained from prior study of topo-

graphic and geologic maps can also be of great value in field work. This would help in determining which areas are likely to be fossiliferous and which are not. A significant amount of time in the actual field survey can be saved by this knowledge. Topographic and geologic maps as well as pertinent literature are also used throughout the field survey.

Phase II. Field Survey

A preliminary inspection of the area to be surveyed is made by myself, usually at the beginning of the literature search and map study. This is done to determine access roads and what type of field equipment will be necessary.

The field party, with myself as supervisor, would begin the actual survey as soon as the preliminary literature search and map study is made. At times when I am not able to be in the field, I designate my most able assistant to be in charge.

The manner in which the area is surveyed depends somewhat on the special conditions of the project. If any excavations are to be made in the early stages by the firm for whom the survey is being conducted, then these sites are checked for fossils first. Otherwise, a systematic coverage of the entire area is made, section by section.

The field party will set up camp either within the study area, or if that is not feasible, as close to it as possible. Generally, the work week will be Monday through Friday or Saturday. Each day's work will begin at or shortly after sun-up and continue until shortly before sun-down. Depending upon the time of year, the workday will be ten to twelve hours.

During the survey extensive notes will be taken by each party member concerning the area covered (a separate copy of the procedures for field notes accompanies this paper). All reports submitted will rely heavily on these

field notes. Any sites from which fossils are found will be accurately plotted on a topographic map and marked with the field number given in the notes. Relevant data about the fossils are to be recorded in the notes. Polaroid pictures are taken of each site (distant and close-up) to allow quick identification of the site at a later date. The pictures will be marked with the necessary field numbers.

Recovered fossils are given a field identification, wrapped and numbered (the number corresponds to the field number and data in the notes). A more accurate identification is later made in the laboratory. No extensive collecting will be done during the survey unless it is at a site where excavations will destroy significant fossils, or where structures to be built later will prohibit future fossil collecting. In these instances, good representative collections of the fossils will be made by the field party in as short a time as possible.

Phase III. Identification of Specimens

As specimens are brought in from the field they are unwrapped and placed in trays. A label is placed with the specimens which is filled in to include all relevant data. A sample card is shown here. Identification is made only to the taxonomic level that is necessary for the survey. More detailed identifications will be made some time after the survey project has been completed, either by myself or by students who wish to work on them as they relate to

BRIGHAM YOUNG UNIVERSITY
Vertebrate Paleontology

Specimen No. ..... Locality No. .....
Sci. Name .....
Material .....
.....
Formation .....
Location .....
Age .....
Collected By ..... Date .....
Identified By ..... Date .....

various studies. Identifications are made by comparing specimens to previously

identified ones in the collection (or when necessary in the collection of another institution) or by using pictures and data found in the literature.

Some preparation may be needed in order to properly identify specimens. This may mean the removal of part or all the maxtrix surrounding a fossil. This work would be kept to a minimum for the survey. For instance, it would usually be necessary to prepare just a small percent of the fossils collected. Complete preparation would later be done in conjunction with a detailed study of the fossils after the survey project was over.

All fossils collected during the survey would be kept in proper storage cabinets as part of the Brigham Young University fossil collection. These specimens will always be available for inspection by interested persons either in or outside the institution.

Phase IV. Report Writing

The number and type of written reports to be submitted will depend upon the desires of the firm for whom the survey is being conducted. Generally, there will be several short reports relating the progress of the survey. Items to be included in some or all these reports would be: persons actually conducting the survey, dates and time spent in the work, areas covered, general data on fossils encountered, special problems and budget expenditures. A final report would be submitted at the conclusion of the survey which would include all the data requested by the sponsoring firm and that required by the Bureau of Land Management, Department of the Interior, of the United States Government.

PROCEDURE FOR RECORDING FIELD NOTES

1. USE THREE-HOLE LOOSELEAF NOTEBOOK FOR ALL FIELD NOTES. SIZE OF PAPER SHOULD BE APPROXIMATELY 9 INCHES BY 6 INCHES; LINED PAPER WITH LEFT-HAND MARGIN IS PREFERRED.

2. WRITE ON ONE SIDE OF PAGE ONLY.

3. USE MEDIUM GRADE OF PENCIL HARDNESS: 2-3 OR F.

4. EACH NEW LOCALITY IS TO BE GIVEN A SEPARATE FIELD NUMBER WHICH SHOULD CONSIST OF THE AUTHOR'S FULL INITIALS, THE LAST TWO DIGITS OF THE YEAR AND THE CONSECUTIVE NUMBER OF THE LOCATLITY (e.g., THE FIFTH LOCALITY DISCOVERED IN 1972, WOULD BE RECORDED AS WEM 725).

5. CONSECUTIVELY NUMBER PAGES IN NOTEBOOK, TOP CENTER OF PAGE.

6. ENTER DATE.

7. RECORD LOCALITY.

8. RECORD FORMATION, AND WHERE POSSIBLE THE MEMBER, FROM WHICH FOSSILS WERE RECOVERED.

9. RECORD NAME OF TOPOGRAPHIC MAP WHICH RELATES TO AREA OF FOSSIL SITE.

10. BODY OF NOTES FOR EACH FIELD NUMBER SHOULD INCLUDE THE FOLLOWING:

    a. DISTANCE AND DIRECTION FROM NEAREST WELL-ESTABLISHED POINT (e.g., HIGHWAY INTERECTIONS, TOWN, CONFLUENCE OF STREAMS, ETC.)

    b. PART OF SECTION, SECTION, TOWNSHIP, AND RANGE

    c. SKETCH MAP RELATING FOSSIL SITE TO NEAREST REFERENCE POINT IF HELPFUL

    d. BRIEFLY DESCRIBE STRATIGRAPHY AND LITHOLOGY

    e. IDENTIFY FOSSILS AS TO TAXA AND MATERIAL REPRESENTED (INSOFAR AS POSSIBLE)

    f. RELATE CONDITION OF FOSSILS AND ANY OTHER NOTEWORTHY DATA (TRY TO KEEP DATA FACTUAL AND SPECULATIONS TO A MINIMUM)

    g. IDENTIFY PEOPLE IN FIELD PARTY

SAMPLE ENTRY

P. 3

WEM 74-3
JUNE 13, 1974
VERNON CHARD RANCH
EASTERN WYOMING

S.E. POWDER RIVER BASIN
U.S.G.S. MAP, OM-185
1957
BRULE FM. (M. OLIGOCENE)

FOSSIL SITE, CENTER OF SECTION 19, T34N, R 60W

FROM SMALL SCHOOL BLDGS., NE 1/4, SEC. 12, T34N, R61W (SEE NOTES FOR WEM 73-19, P. 22), HEAD EAST ON DIRT RD. 1.9 MI, TURN SOUTH (RIGHT), GO 1.3 MI & STOP. SITE 25-75 YDS. TO WEST.

WHITE CHANNEL SS. JUST BELOW RD. LEVEL. SOME FOSSILS HERE, DIFFICULT TO REMOVE INTACT, NOT COLLECTED AT THIS TIME. BUFF-COLORED MUDSTONE (MS.) BENEATH SS. YIELDED MANY FOSSILS WHICH WERE COLLECTED. MS. WELL SORTED, HORIZONTAL BEDDING. THIN INTERSECTING $CaCO_3$ SEAMS PRESENT.

GEN'L AREA ONE OF GRASSLANDS DISSECTED BY NUMEROUS RAVINES WHICH PRODUCE A CONDITION OF BADLANDS. PINE COVERED RIDGE TO SOUTH AT HIGHER ELEVATION.

NUMEROUS FOSSILS WEATHERING IN PLACE, BUFF-COLORED & USUALLY WELL PERMINERALIZED. ARTICULATION & ASSOCIATION OF SKELETAL ELEMENTS COMMON. FIELD IDENTIFICATIONS INCLUDE: OREODONT (NUMEROUS), RODENTS (COMMON), LEPTOMERYCID (COMMON), BRONTOTHERE (SCARCE), HORSE (COMMON), RHINO (SCARCE), ENTELODONT (SCARCE), CARNIVORE (SCARCE) & NUMEROUS TORTOISES. BONES & TEETH IN VERY GOOD CONDITION, VERY LITTLE ABRASION. NO PATTERN WAS NOTED IN ARRANGEMENT OF FOSSILS.

FIELD PARTY - MYSELF & B.Y.U. SPRING FIELD CLASS IN PALEONTOLOGY (SEE WEM 74-1, P. 1).

POLAROID PICTURES TAKEN.

Brigham Young University

SEP 23 1974

September 18, 1974

Mr. Andy Jackson
VTN
6875 E. Evans Avenue
Denver, Colorado 80222

Dear Mr. Jackson:

It is necessary for me to fly to Louisiana tomorrow morning for a few days. I was not aware of this trip when I talked with you last Monday. As a result it will be possible for me to send only a very preliminary progress report on the paleontological survey of tracts U-a, U-b and vicinity which is included. Upon my return next week I will compile a more detailed report.

Sincerely,

Wade E. Miller

Dr. Wade E. Miller

WEM/ssc

Department of Zoology, 575 WIDB, Brigham Young University, Provo, Utah 84602 (801) 374-1211, Ext. 2006

SEP 23 1974

Initial Paleontological Survey of

Tracks U-a, U-b and Vicinity, Uintah County, Utah

The area of investigation was first very generally surveyed to determine the topography, included geological formations, nature and extent of outcrops and accessibility to the entire area by four-wheel and two-wheel vehicles. Boundaries were staked, flaged and photographed for continued reference.

A study of proposed test and core holes, as shown on VTN's "Proposed Exploration Core Holes" map, has been made to determine the presence and significance of any fossils. The following sites were investigated and found to contain no significant fossil accumulations: 2, 3, 4, 5, 7, 8, 10 (site 10 is apparently not marked correctly, as the map indication is one canyon east of the marker on the ground), P-2, P-3, exploratory core holes, SW 1/4, Sec. 17, T 10S, R 24E and NW 1/4, Sec. 34, T 10S, R 24E. Site 6 contains some fossil plant and insect specimens and needs to be examined more critically before giving clearance. Other sites on the above map are apparently not marked on the ground. They will be located as shown on the map unless otherwise indicated by VTN.

Several sections have been studied, most of which contain no significant fossil accumulations. The sections that have been cleared are: 16, 18, 19, and 20, T 11S, R 25E and Sec. 13, T 10S, R 24E. Section 13 T 11S, R 24E, and Sections 17 and 21, T 11S, R 25E do contain abundant fossils and need to be further studied before evaluation is made.

Andy

Brigham Young University

October 29, 1974

Mr. Andy Jackson
VTN
2600 S. Parker Rd.
Parker Place #4
Denver, Colorado 80232

Dear Andy,

Enclosed is a progress report on the paleontological survey. It gives essential information from the beginning of field work in August, through October 25. A more detailed report on specific faunal identifications will be given in the final report unless this information is requested sooner.

If the report format is not satisfactory, please advise me of modifications you would like to see in subsequent reports.

Will see you November 4th or 5th.

Sincerely,

Wade

Wade E. Miller
Assoc. Prof. of Zoology and Geology

WEM:dm
Enclosure

Department of Zoology, 575 WIDB, Brigham Young University, Provo, Utah 84602 (801) 374-1211, Ext. 2006

REPORT OF PALEONTOLOGICAL SURVEY OF TRACTS
U-a and U-b, EASTERN UINTA BASIN, UTAH

I. FIELDWORK

A. General

Four students are assisting me in the paleontological survey. Three are graduate students; Steven Barker, James Barton and Helen Klopp, while one is a senior, Kathryn Pearson. All have had training in paleontology; Steven Barker, James Barton and Kathryn Pearson are majoring in that field. Each student is devoting full time to the survey. The field party number fluxuates between three and five, with my field work being confined mainly to weekends. While I am not in the field, Steven Barker is in charge.

The first date in the field was August 18, 1974, when I made a preliminary trip through the survey area. Field work commenced on August 26, 1974, after the personnel had been briefed and necessary supplies were obtained.

B. Procedure

The field party leaves each Monday from Provo to the survey area, returning on Saturday. Camp is set up within the survey area and the Bureau of Land Management requirements are adhered to. It is felt necessary to break camp and reestablish it each week because of past vandalism in the vicinity.

A four-wheel drive Suburban and a trail bike, used only on established roads or trails, are used to transport personnel to working areas. Where no roads exist, it is necessary to walk in.

Field notes are kept by each person and a copy is made of all for a master file. Notes contain initials of the worker, date, topographic map(s) being used, part of section, section, township and range, member and formation, lithology and stratigraphy (briefly), occurrence of fossils including; type (field identification), abundance, condition, areal and (where possible) stratigraphic extent. Also, any other relevant information is recorded. Locations of fossils are plotted on topographic maps.

C. Work Completed to Date

Monitoring and core hole sites have all been checked insofar as known. The majority are located at sites that are unfossiliferous. However, fossils are located at many sites and no further excavation should take place at these until an adequate specimen sampling can be taken. Monitoring or core sites at which no fossils were found are as follows: A-7, S-3, A-5, G-17, P-1, A-6, HS-2, G-1, A-2, A-3, HE-2, P-4, A-8, P-2, G-20, G-13, S-13, G-6, S-7, G-16, G-19, HS-4, G-10, X-5, HE-3, G-11, G-22, X-4, X-11, S-12, S-9, G-2, A-1 and A-10. Sites which contained fossils are (P=plant, I=invertebrate and V= vertebrate): S-1 (P&I), S-5 (P&I), S-11 (P), G-9 (P), G-8 (P), S-2 (P&I), X-3 (P), X-6 (P&I), G-4 (P), HS-3 (P&V), S-10(P), G-18 (P), G-14 (P), G-12 (P), A-12 (P), S-8 (P), S-6 (P), G-15 (P), A-9 (P&V), S-15 (P&I), X-2 (P), HE-1 (I), X-10 (I), X-1 (P), A-11 (P), G-3 (P&V), G-5 (P), S-4 (P), P-3 (V), G-7 (V), X-8 (P), A-4 (V) and G-21 (P&V). Plant fossils consist of petrified wood and leaf impressions, primarily of angiosperms. Fossil invertebrates are mainly larval forms of various flies and beetles that have been carbonized. Some adult insect forms have also been found. Vertebrate fossils consist of fish scales (surprizingly, skeletal remains of fish have not yet been found), turtle shells and limb elements and various mammalian bones.

The following sections have been surveyed: Sections 13, 24, 25 and 36 of Township 10 south, Range 23 east; Sections 13, 18, 19, 29, 30, 31 and 32 of Township 10 south, Range 24 east; Sections 5, 8, 17, 20 and 29 of Township 10 south, Range 25 east; Section 4 of Township 11 south, Range 24 east. Fossils have been found somewhere in each of these sections. However, they are usually found in small areas of the sections and some sample collecting is all that will be needed. A few locations yield fairly high concentrations of fossils and should not be distrubed until further evaluations can be made. These locations are in parts of the following sections: 13, 29, 30, 31 and 32, T10S, R24E; 19, T10S, R25E.

Newly formed or widened roads to the following sites were checked: A-8, P-4, G-14, G-18, A-6 as well as the grading that has been done in Evacuation Creek wash north and south of G-14 and G-18. The cuts were all quite shallow (a few inches to a foot) and did not endanger any fossils. A new road was cut from the junction of 45 and 207 to Nt. 8. Again, the cut was very shallow and no damage to fossils occurred.

D. Problems

A clearance was given to cut new roads or widen old ones before a paleontological investigation of the proposed roads was made. Fortunately no damage was done in the operation. However, any future cutting of roads or excavating should be cleared paleontologically before work commences. Please inform me sufficiently in advance of future road cuts or other excavations.

II. BUDGET (expended to date)

Consulting fees and salaries	$ 6,756.25
Equipment	2,732.62
Transportation	2,121.80
TOTAL	$11,610.67

Wade E. Miller

RECEIVED NOV 1 1 1974

Brigham Young University

Mr. Andy Jackson
VTN Colorado, Inc.
2600 S. Parker Road
Parker Place #4
Denver, Colorado 80232

11/8/74

Dear Andy:

Enclosed is a weekly progress report on Tracts U-a and U-b of the Uinta Basin project. Unless trailer space becomes available at the site, it is unlikely that much more work will be done until weather permits in the Spring. However, I will probably make one or two more short trips there to resolve a few matters sometime this month. In general the paleontological survey has been going well.

Also enclosed is a short proposal for the paleontological survey of the Consol-Kemmerer coal mine project. If you would like a more formal, detailed proposal after you are given more information on it, let me know and I will be happy to accommodate your request. My understanding is that for the present you would just like something in writing indicating if I could make the paleontological survey, when it might be completed and how much I estimate it will cost.

Sincerely,

Wade

Wade E. Miller
Assoc. Prof. of Zoology & Geology

WEM:dm

Copy made f/ J. Schmidt

Department of Zoology, 575 WIDB, Brigham Young University, Provo, Utah 84602 (801) 374-1211, Ext. 2006

REPORT OF THE PALEONTOLOGICAL SURVEY OF TRACTS

U-a AND U-b, EASTERN UINTA BASIN, UTAH

(Week of October 28-31, 1974)

Because of inclement weather conditions in the survey area, the field party, consisting of three persons, was able to work only a part of the week. Unless a trailer will be available for the paleontological survey party, it is doubtful whether additional field work can be done until weather conditions improve in the Spring.

Sections 16 and 17, T10S, R24E were completed during the above week. Some vertebrate specimens and petrified wood were found in coarse sandstone lenses in section 17. The fossilized bone and wood, however, is not abundant enough or sufficiently well preserved to be considered scientifically valuable in this instance. Only minor amounts of petrified wood were found in section 16. Again, the small amount of poorly preserved material does not make it scientifically valuable, so no problems are expected for any excavation in these two sections.

Wade E. Miller

1517-21

Brigham Young University

December 2, 1974

Mr. Andy Jackson
VTN
2600 S. Parker Rd.
Parker Place #4
Denver, Colorado 80232

Dear Andy,

Enclosed is a monthly progress report on the paleontological survey from October 28th to November 29th. It is doubtful that any more field work will be done now until weather permits in the spring with the exception of short trips to check critical areas. Two important sites have been discovered as indicated in the report. At each of these is a significant deposit of mammals from the Uinta formation. Two of the fossils tentatively identified are the largest terrestrial vertebrates of their day - anywhere in the world.

The "Certificate of Title" for the motorbike that is being used on the project came to me. It indicates that a signature of the owner is required. Please advise me on this.

Sincerely,

Wade

Dr. Wade E. Miller
Associate Prof. of Zoology and Geology

WEM:dm
Enclosure

C made of [illegible]

Department of Zoology, 575 WIDB, Brigham Young University, Provo, Utah 84602 (801) 374-1211, Ext. 2006

MONTHLY REPORT ON THE PALEONTOLOGICAL SURVEY OF
TRACTS U-a AND U-b, EASTERN UINTA BASIN,UTAH

(Report Period - October 28 to November 29)

I. FIELDWORK

A. General

The number of personnel doing field work varied between three and four during the above time period. Persons in the field party were Dr. Wade Miller, James Barton, Holly Klopp and Steven Barker. The dates spent in the field were: October 28th to 31st, November 18th to 23rd, and November 25th to 27th and 29th.

B. Work Completed

Since the monitoring and core hole sites have all been inspected, current field work consisted of surveying additional sections in the study area. Sections completed since the last report are: Sections 15, 16, 17, 18, 21, 22, 28, 33, and the north one half of section 10 in T10S, R24E, and the north one half of sections 2 and 3 in T11S, R24E. Fossils were widespread over these sections and are discussed on a section by section basis. Section 15 - sparse plant fossils including leaf imprints and petrified wood; not considered significant. Section 16 - petrified wood common; probably not significant. Section 17 - same as in section 16. Section 18 - significant numbers of fossil vertebrates and some petrified wood. Section 21 - same as section 18. Section 22 - same as in section 16. Section 28 - same as in section 16. Section 33 - some turtle shell fragments; probably not significant. North one-half of section 10 - significant numbers of fossil

mammals; site will need further investigation. These sections were all in township 10 south, range 24 east. North one half of section 2 - same as in section 16. North one half of section 3 - same as in section 10. These parts of sections were in township 11 south, range 24 east.

C. Potential Problems

The sections listed above in which significant numbers of fossil vertebrates have been found should be investigated further. If excavation or dumping is planned for these areas it might be possible to collect the fossils located there first unless they are found to be too abundant. Two of the fossil mammals tentatively identified are the largest land animals of that age in the world. They are scientifically important for other reasons as well.

Wade E. Miller

Dr. Wade E. Miller 12/3/74

WHITE RIVER
SOUTHMAN CANYON
Southam Canyon
Asphalt Wash
Eracuation Creek
GAS FIELD
F1
F2
F3
F4
F5
S-1
S-2
S-3
S-4
S-5
S-8
S-9
S-10
S-12
S-13
A-1
A-2
A-3
A-4
A-5
A-6
A-7
A-8
A-9
A-10
A-11
A-12
VR1
VR2
VR3
VR4
VR5
VS1
VS2
VS3
VS4
VS5
VG1
VG2
VG3
VG4
VG5
VJ1
VJ2
VJ5
WR1
WR2
WS1
WS2
WS3
WG1
WG2
WG3
WJ1
WJ2
WJ3
PP1
PP2
PP3
PP4
PP5
PP6
PP8
PP10
PP11
PP12
PP13
PP14
PP15
PP16
PP17
PP18
PP19
PP20
HS-1
HS-2
HS-3
HS-4
G-1
G-2
G-3
G-4
G-5
G-7
G-8
G-10
G-11
G-12
G-14
G-15
G-17
G-18
G-21
G-22
X-1
X-2
X-3
X-4
X-5
X-6
X-9
X-10
X-11
P-1
P-2
P-3
P-4
HE-1
HE-2
HE-3

VG3
PP8
S-9
WG1
WJ3
A-4
G-12
S-8
A-12
S-6
G-20
G-13
WR3
G-19
G-6
S-7
G-16
S-15
Center Fork
Asphalt Wash
Rainbow Site
Thimble Rock
Watson
Evacuation
Creek
Long
AND GAS FIELD
LEGEND
-----ACCESS ROUTE
A AIR MONITORING SITE (12)
(2,6) COMPLETE AIR QUALITY & METEOROLOGY STATION WITH 100' TOWER
(3) COMPLETE AIR QUALITY & PARTIAL METEOROLOGY STATION
(1,4,5,7,8) PARTIAL AIR QUALITY & PARTIAL METEOROLOGY STATION
(9,10,11,12) PARTIAL METEOROLOGY STATION
S SURFACE WATER MONITORING STATION (14)
P PILOT TEST HOLE (4)
G GROUND WATER MONITORING STATION (21)
HE EXISTING GEOLOGIC CORE HOLE, EVACUATION (3)
HS EXISTING GEOLOGIC CORE HOLE, SOUTHAM (4)
X EXPLORATION GEOLOGIC CORE HOLE (9)
W WILDLIFE SAMPLING AREA (12)
V VEGETATION STUDY AREA (20)
G GREASEWOOD
J JUNIPER
R RIPARIAN
S SALT BUSH
PP PHOTO PLOT (20)
F AQUATIC BIOLOGY SAMPLING STATION (5)
REVISIONS
DATE BY
DATE BY
DATE BY
DATE BY
DATE BY
vtn colorado inc
ENGINEERS ARCHITECTS PLANNERS
6875 EAST EVANS AVENUE DENVER, COLORADO 80222 (303) 759-4271
SUN OIL COMPANY, PHILLIPS PETROLEM COMPANY
AND THE WHITE RIVER SHALE OIL COMPANY
FIELD MONITORING SITES
EASTERN UINTA BASIN, UTAH
DWN BY
DATE
SCALE
JOB NO